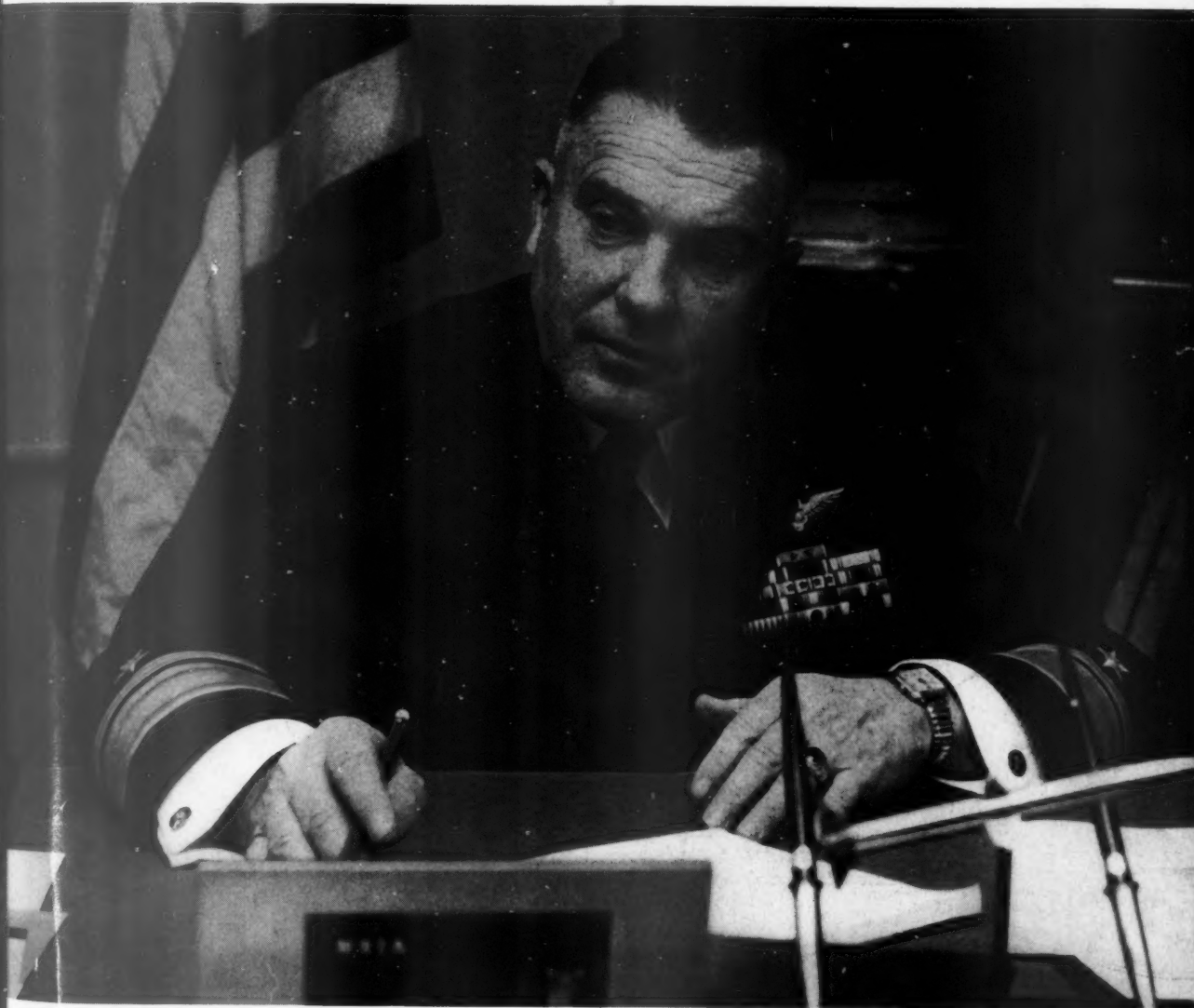
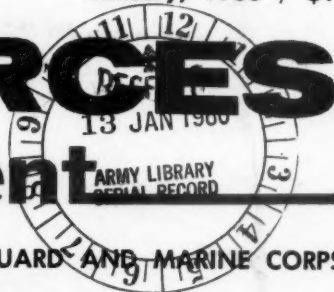


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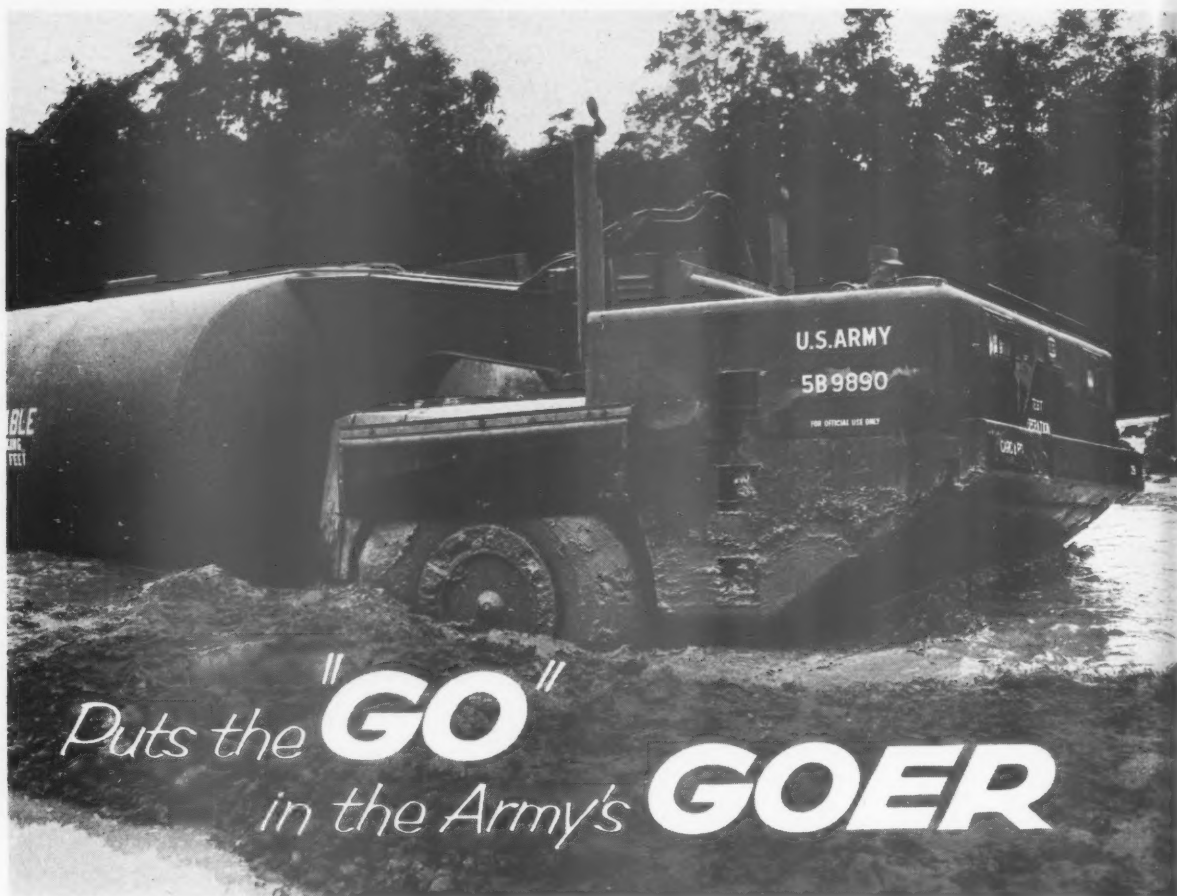


BuWeps' RAdm. Stroop . . .

"More Logical Spending" for Navy's Weapons..... p. 19

Should Communications Have Single Management..... p. 15

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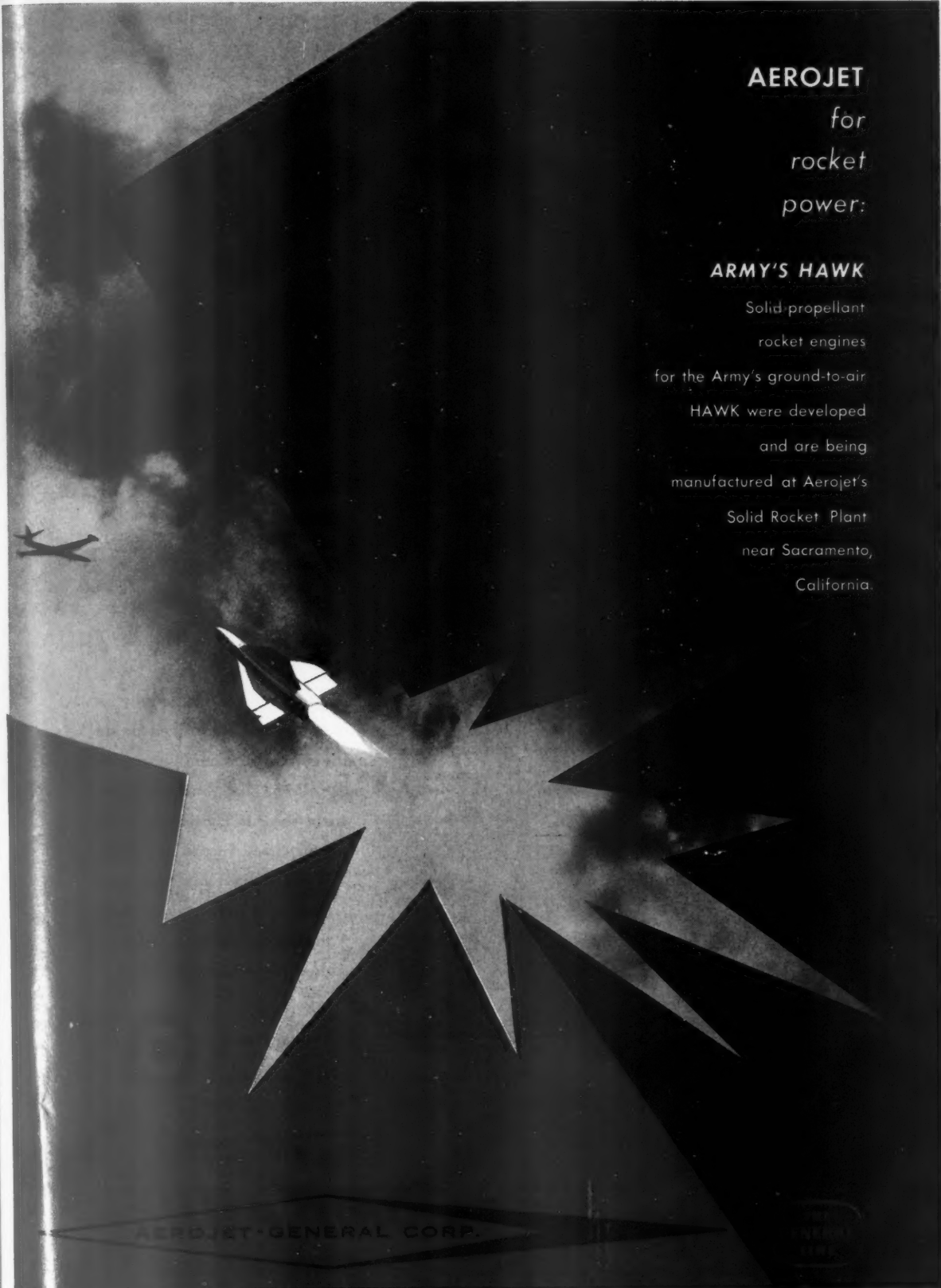
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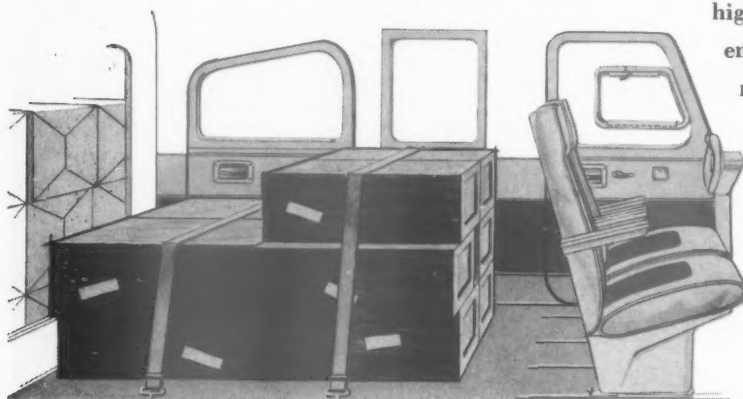


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PUBLISHED FOR THE ARMY, NAVY, AIR FORCE, COAST GUARD AND MARINE CORPS

JANUARY, 1960

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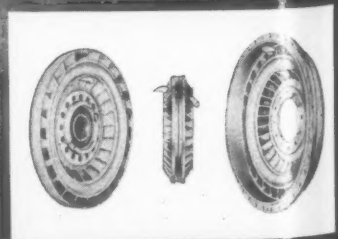
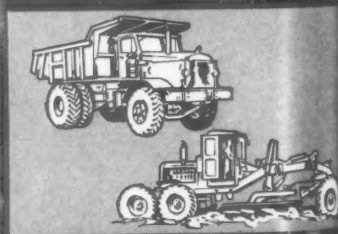
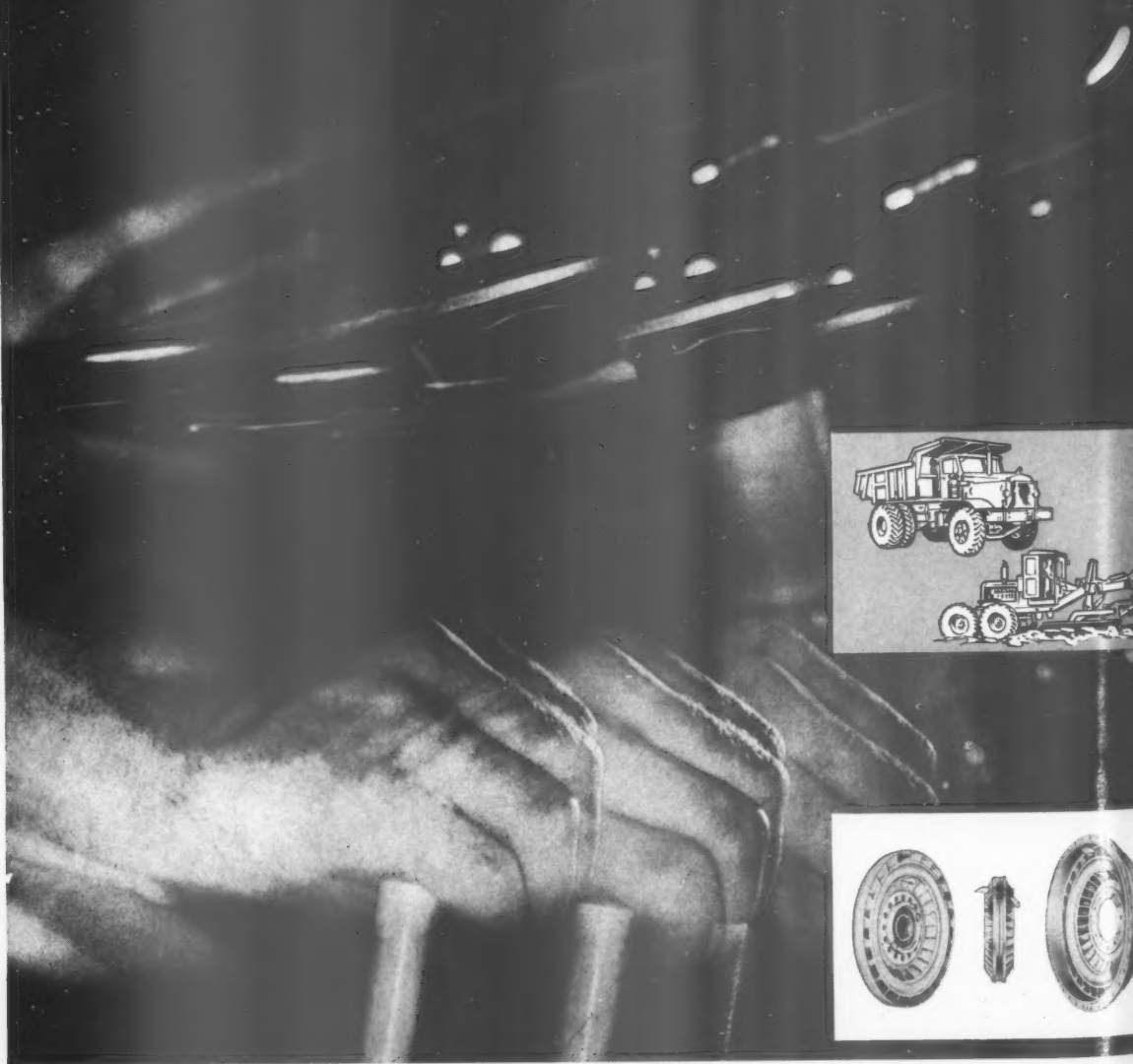
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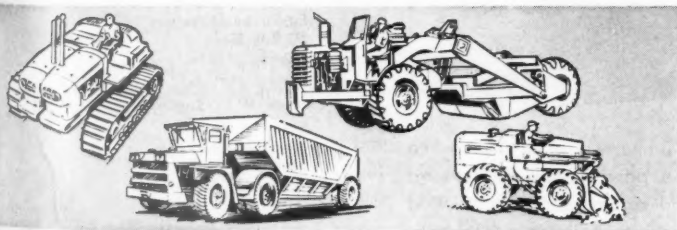
Where Industry Thinks the Military Market Is Headed . . . How Do You Evaluate a Weapon System? . . . Position Classification: Management’s Responsibility

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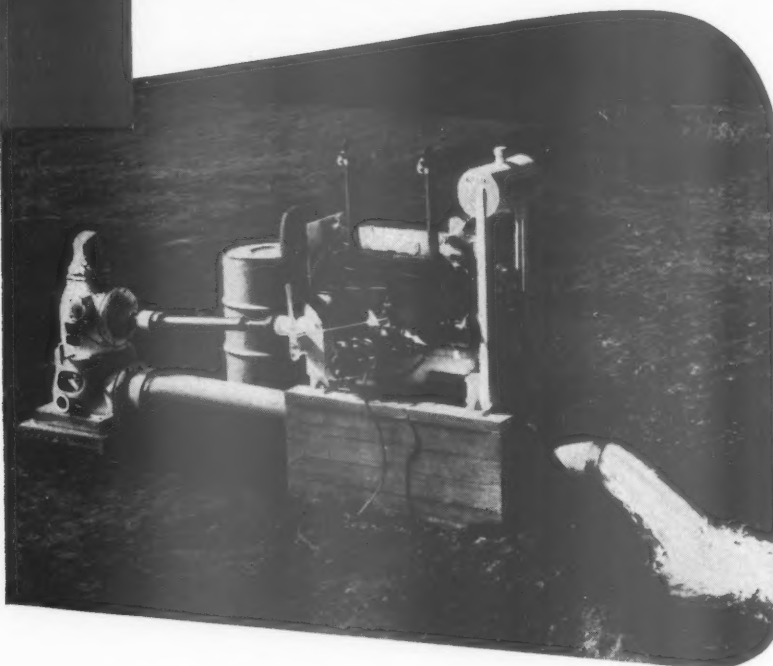
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ARMED FORCES MANAGEMENT

The Unification of the Gods

IT was bound to happen sooner or later. That Greek master of knowledge on all subjects, universally popular commentator, awesomely prolific writer, has pointed his lance at the Defense Department. His name: Anonymous (pen name Anon.) His observation:

I

Way up on the heights of Olympus
In the era before time began
Three Gods who were quite independent
Ruled over the creatures and man.
Now one had control of the oceans
The fish of the sea and the wave
He ruled in his watery kingdom
The sailors and seamen so brave.
Another was master of heavens
The clouds and the stars and the sky
The sun and the moon and the planets
And all of the creatures that fly.
The third on the earth was the ruler,
Of mountains, and deserts of sand,
Of cities, and forests, and vineyards,
And everything else on the land.
Each one to his own was the master
An so for an aeon of time
The earth and the sky and the oceans
All functioned in heavenly rhyme.

II

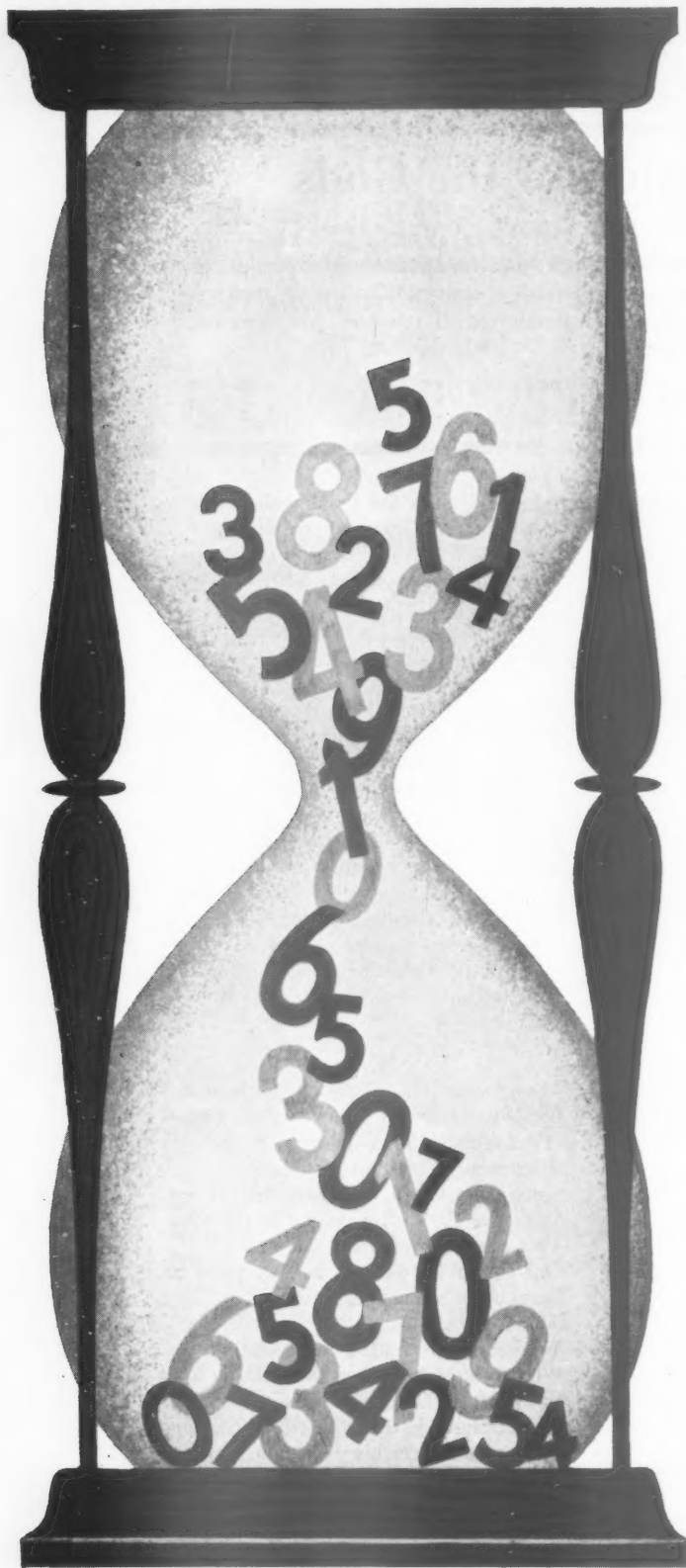
But just as it is with we humans
So it was with the immortal brain
They had to improve on the system
And so they began to complain:
"Just mark you, we have triplication!
It's useless, it's wasteful, and worse
We don't have our true roles and missions
Agreed on in chapter and verse."
"We're wasting the worshippers' tribute,
By bureaucracy's tape we are tied
We'll have central procurement of nectar
We'll be much better off unified."
"One robe of a uniform fabric,
A garland of single design,
Ambrosia we singly will manage
And no one will get out of line."
"The Joint Chiefs of Status they'll call us
A body of power supreme
In cooperation we'll govern
A truly Utopian dream."

III

Alas and alack for the hopefuls
For even the Gods can be wrong
The outcome of unification
Was something quite less than a song.
"Just *who* will procure all the nectar?
And how will he be reimbursed?
What color the robe and the garland?"
Each one said that his should be first.
"Just how big a lake is an ocean?
Are frogs of the land or the seas?
Are seagulls of air or of water?
What of birds when they nest in the trees?
And what is my share of the tribute?
My Scribe always tells me I'm broke.
There's *so* much more air than there's water
And the land is so small it's a joke."
And so not a thing was decided
They all went around in a loop
The Joint Chiefs of Status were headless
And too many cooks spoil the soup.

IV

The Goddess of Discord is with us
She'll be there till the end of all time
'Tis folly to simply ignore her
Whatever the region or clime.
Since Cain had a fight with his brother
Since the Gods disagreed o'er the Ring
To a just and impartial tribunal
Our squabbles we've found we must bring.
Democracy's tenets are noble
And for them our fathers have died,
Yet ever there must be a leader
Whose function it is to decide.
In all of our human endeavor
Our strength is the way we've combined
Each man makes his own contribution
With the skill of his hands and his mind.
We still would be living in treetops
And all of our gains would be loss
If somehow we hadn't discovered
That someone has got to be boss!



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ARMED FORCES MANAGEMENT



Washington Background

GENERAL ACCOUNTING OFFICE IS AT IT AGAIN. GAO comptroller Joseph Campbell has complained to Congress that Pentagon is withholding two secret reports which "could help the agency determine whether U.S. military aid to Europe is being efficiently managed." Defense answer: GAO has no right to the information and was stepping out of line asking for it.

HASSLE RECALLS A SIMILAR INCIDENT last year when Air Force was blasted for not releasing details of an internal missile management study. Man in the middle of that one, present Defense Deputy Secretary Douglas, answered, in essence, "Management has to have control of information to the point of protesting its information sources. We are entitled to advice without everyone participating expecting it, and their names, to be published."

BUDGET SQUEEZE IS FORCING AIR FORCE BASE DEACTIVATION (four more Air Defense units in late December) to an extent largely overlooked what with all the more spectacular program stretchouts—B-70, F-108, et al. What bothers the Congressmen, more by far than defense preparedness, is what this will do to their voting strength in election year 1960.

BUDGET SQUEEZE IS HAVING OTHER REPERCUSSIONS. Sen. Stuart Symington charged last month that DOD is wasting "tens of millions of dollars a week" because it has failed to develop a genuine weapon system evaluation. He called for another change in "the obsolete organizational structure of the Department of Defense."

CHARGE GAVE A BOOST, in the political arena, to the advocates of a single joint general staff at top Pentagon level—and there are quite a few in high Defense positions. Nothing concrete is likely to come of it, however, until 1961 and even then it will depend on who gets elected. "Single Staff" believers have been encouraged by the 1958 Reorganization act, believe only that it didn't go far enough.

ANSWERED ONE SKEPTIC: "It's true no place else in the world but Washington. Everytime we have a problem, we don't try to solve it. We try to organize our way out of it."

SPEAKING OF GAO, Congress' accountants are wrapping up their investigation of missile management, plan to submit it in three parts to Congress. Defense is viewing the approaching release with apprehension, not because they have anything to hide but because, said one top official, "It will probably only confuse even further an already complicated picture."

MORE ON CONFUSION: latest report from House (Hebert) Armed Services Investigations subcommittee is that they will not recommend new legislative clamps on industry advertising of Defense products. Forthcoming report on "influence paddling" only wrist-slaps "Propaganda-type ads"—whatever they are.

NEITHER CONGRESS NOR DEFENSE is expected to put up much of a fight for increased defense appropriations in FY 1961 because firm administration spending ceilings would not allow apportionment of additional money even if it were voted.

WHAT'S AHEAD IN THE COMPUTER BUSINESS: both Army and Air Force are doing extensive experimenting with use of electronic computers to run base operations. Air Force has already worked out system for mechanizing entire base supply operation. Army is in process of trying to put all paperwork of a Class I installation on a computer.

'ONE ARMY' CONCEPT DETAILED

Specific measures in implementing the so-called "one-Army program" have been outlined by Secretary of the Army Wilbur Brucker.

Brucker's recommendations are designed to improve combat efficiency for all three components—active Army, National Guard, and Reserve—and at the same time enhance harmony and spirit now existing in these three branches. The recommendations have been forwarded to Under Secretary of the Army Hugh Milton. Among the recommendations:

(1) Providing modern weapons such as Honest John rockets—to Reserve or National Guard units for training.

(2) Priority for reservists at service schools during certain periods of the school year, to allow maximum attendance of reserve personnel during summer months and slack business periods.

(3) Accelerated training for non-divisional technical and administrative units by developing a planned cycle providing for periodic training.

(4) Better provision for equipment support pools for use by reserve components at summer training.

Other recommendations included those for a study of allocations of quotas for National Guard and Army reserve commanders and their staffs in field exercises and maneuvers, that the six month training program for Reserve Forces personnel be retained, and that all indications of component be eliminated from the organization designations to the extent allowed by law.

FURTHER UNIFICATION DESIRED

Congressman-at-large Frank Kowalski (D-Conn.) has fired the first shot at new Secretary of Defense Thomas Gates in the continuing battle for further service unification.

In a letter sent to Secretary Gates less than a week after he took over his new office, Kowalski said "I believe that the single, most valuable program you could advocate as you take over your new responsibilities is the real, full unification of our military services."

Kowalski pointed out that so-called reorganization programs, "one after another, have failed to end waste of American manpower, waste of talent, and waste of billions of dollars." He called for a "sweeping away" of the old ideas which have caused these faults in defense management.

Calling for an end to continued inter-service bickering, Kowalski stated "that the committee system of command has failed." The Connecticut Congressman stated flatly that "the separate, competing services must be eliminated and a single defense force set up."

Acknowledging that delays would be unavoidable in such a program, he urged that Gates immediately set about true unification of defense missile programs.

Kowalski's letter is a strong indication that pressure for greater unification of the services will be one of the top issues in this year's Congress, and probably in the forthcoming presidential elections.

GAO HITS GENERAL ELECTRIC

General Accounting Office has alleged that General Electric overcharged the American Bosch Arma Corp. in con-

nection with pricing of fixed price subcontracts awarded to Arma. The Air Force prime contracts were for B-52 components systems.

However, GAO said General Electric later refunded \$3.4 million to Arma. This was passed on to Air Force, except for some \$200,000 to be credited to price redetermination, and roughly \$52,000 retained by Arma.

GAO said that proposed prices by GE for use in contract negotiations, "were based on estimates of cost which were in excessive costs known to GE or which GE could reasonably expect to incur in performing subcontracts."

GAO also charged that Arma accepted these prices without review. Also, in buying spare parts from GE at catalog prices, Arma did not look for cost savings that could have been obtained by placing orders in economical quantities.

GAO acknowledged General Electric's refund but said it was not a substitute for sound cost estimates. GAO also pointed out that Air Force has taken steps to avoid repetition.

NEW CRAF CONTRACT OFFERED

Air Force is offering Civil Reserve Air Fleet members a new stand-by contract which would not require agreement on prices until 30 days after fleet activation. The move aims to overcome difficulties Air Force has had in agreeing on contract terms with many of the airlines.

Air Force says the delay—about a year since carriers and the AF agreed on general contracts principals—results from difficulty in making realistic cost projections and the expense, to some smaller lines, of conducting necessary cost studies. The larger airlines will probably insist on "pricing out" their contracts, despite the new offer, and the smaller airlines are expected to accept the terms of the new contract.

The new contract would also provide advanced payments to be made upon activation of the Civil Reserve Air Fleet. First month's cost experience would be enough to base future cost estimates and the firm contract could then be negotiated.

Air Force feels the new approach will help clear the way for other vital CRAF problems. These include: need to clarify the role of carriers involved in both CRAF War Air Service Pattern, and provide for limited activation of CRAF and brush fire wars. Present plan only outlines all out activation procedures.

NEW MILITARY LINE-UP URGED

A new military concept which would completely divorce the Air Force from limited war responsibility has been proposed by the Democratic Advisory Council.

In a recent statement, the council said "an important aspect of our efforts to prevent limited war from turning into all out war and of decreasing the probability of accidents and mistakes would be a redefinition of the roles and missions of the armed services. Serious consideration should be given to the concept of dividing our forces into an 'all-out' force and a 'limited' force, the functions of which would not overlap."

Because of the political considerations involved, it is unlikely that much will result from the proposal.

ARMED FORCES MANAGEMENT



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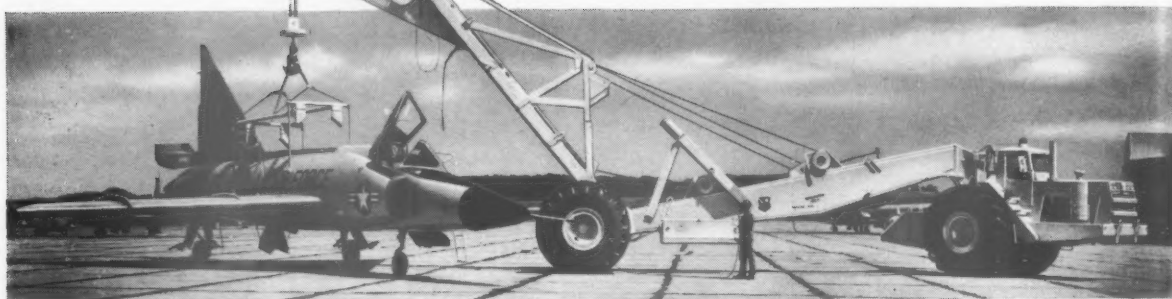
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Should Communications Have Single Management?

Single management of all strategic communications has been a heatedly and extensively discussed theme in the Pentagon in the past few months, is awaiting a decision now from Secretary Gates on "a bold, new concept"—a decision expected this month. The result will be fully reported. For now, here is the background...



All in Favor

COMMUNICATIONS, or rather how to manage it, may appear to some people working in the field as a weary, unexciting debate.

To Defense top management, however, and all people in the Services aware of what is happening, the debate is far from dull and unappealing. Aware of what this management business means, in final analysis, to Defense operations, they need no prompting on the part of some nebulous superior to recognize just how vital the outcome of this debate really is. In fact, when this story is finally written (and ARMED FORCES MANAGEMENT hopes to do so by the Spring thaw), the story may provide a keen insight into where the Services and the top-level Defense structure now fit in Defense Department management operations. As to the debate in question:

Defense Reorganization in 1958 placed central command and direction of U.S. Military Forces under the Secretary of Defense through the Joint Chiefs of Staff. This basic premise is given as the major reason that proponents of a single management for communications have proposed such a scheme.

The new concept envisages a central agency, directly responsive to the Secretary and the Joint Chiefs for the global communications to control strategic military forces.

Another reason for the proposal: The possibility of limited communications under modern war conditions. The added ICBM threat could endanger the Nation's com-

munications and thereby its security. Disruption of trans-oceanic cables and the known vulnerability of radio communications could well lead to limited strategic communications at any given time.

These factors, so say the advocates of single management, make it imperative that existing communications be directly responsive to the requirements of the Defense Secretary and the Unified Strategic Commanders.

According to proponents of the new idea, present communications systems are not considered to be sufficiently integrated to satisfy this "vital need." They are not completely compatible and there is considerable duplication in procurement, research and development and, consequently, higher costs. (In this one sentence, the advocates of single management for communications have summed up the basic reason that the debate has received as much mileage as it has. Were it not for this new aspect of the communications business, the current debate would have gone the same direction as the one in 1949—See box on MCEB.)

The system of the three military services resulted from past command responsibilities of the services. The existing arrangement gives each service responsibility for primary communications systems to specific joint commands. All three also provide their own communications systems to meet their specific requirements.

Under today's concepts of military operations and assigned service missions, separate communications systems have been, until now, considered justified. But the deficiencies of these systems under present conditions and the current needs of the Secretary of Defense, plus the

limited operation and maintenance support of these systems, plus for one more time around the merry-go-round the future quantum jump in communications requirements and answers to those requirements, make a new approach necessary.

Under the single manager* concept, determination of communications requirements of the military services would not be the prerogative of the "single manager." Based on the premise that the manager would not be able to reject operational needs of any requiring service or commander from any given strategic system, communications would be furnished strictly in accordance with requirements and priorities approved by the Joint Chiefs of Staff. The Joint Chiefs of Staff would determine who gets what and on what priority. (In fact, a good deal of the emotional side of the single-management-for-communications debate has stemmed from an interpretation of "what is strategic and what is tactical." None of this emotional attack or rebuttal, incidentally, is presented here.)

Excluded from strategic communications are the self-contained tactical systems required by tactical commanders to exercise control over their tactical forces; ship-to-shore, ground-air-ground, ship-to-ship, fleet broadcast, air defense and early warning communications. Communications tailored for special needs, such as SAGE or DEW line, or terminal communications centers of headquarters are also excluded.

Strategic communications are defined, according to the advocates of single management, as primarily the trunking system which provides necessary communication links between the JCS and unified or specified commands and be-

**Single manager has been, particularly in the communications debate, an easily applied label which does not necessarily mean what most people believe it to mean. Even among proponents of a "single management for communications," the often-banded-about label of "single manager" is not, in its popularity accepted context, exactly, what they mean.*

Those Opposed

CRITICS do not believe that single management in communications is necessary or desirable. They believe that no one service, Army-Navy-Air Force, or other, can be fully responsive to weapon systems with which it is unfamiliar. What do the proponents of single management say is wrong with the present system? There are apparently four principal allegations; lack of compatibility between communication equipment of the services; lack of flexible linkage between communications facilities; large communications expenditures without planned coordination; and in general, a pressing need for a single service manager for all strategic communications.

1—Lack of Compatibility.

In certain instances this is true. The reason, however, is not oversight or failure to give adequate recognition. Simply stated, no system should be designed and operated to provide every customer with the same service that the customer with the most critical requirements must have. To insure complete compatibility would mean raising the level of simple systems to that of the most complex. Result: excessive and needless cost. Some critical Air Force requirements, for instance, fall into a very sophisticated class meaning thousands of bits per second. What is the solution? Design the system to meet the need. Provide the systems

tween these commands and their immediate subordinate headquarters. These are normally considered as long-haul, point-to-point and channel control facilities.

Under single service managership, any single manager selected should meet the following tests:

1. It should have responsibility for strategic communications that interconnect all strategic levels, including the President, his staff, the Defense Secretary, the Joint Chiefs of Staff, and the Unified and Specified Commands.

2. It should have an organization in which the engineering, research and development, logistics and personnel functions are responsive to one head.

3. It should provide extensive communication service to other military services and government agencies.

Proponents of the "single-management-for-communications" theme insist that there exists in the Defense Department today elements which meet these tests now and have the necessary base for the assignment, "stemming from their long and varied experience in providing communications—and in these elements, an organization with 'vast proven experience' where complete responsibility for such communications could be centralized under one head."

How this debate turns out will be of more than passing concern to key elements of the Defense managerial structure. However, it should be pointed out that daily press reports are inclined to delineate these arguments—for supposed ease of public acceptance and understanding—as though one service element was saying one thing and another were answering with the opposite.

Although it is true that for purposes of coordination and routine the idea came up from one clearly-delineated element of Defense, it is by absolutely no means true that all segments of one particular service buy their own service "party line."

The basic conceptual reasoning of proponents of the idea, particularly considering the communications environment today, has many sound factors in its favor. On the other hand, so does the opposition, as noted on the following page.

with inter-connection at selected points for the exchange of traffic. A steady improvement along this line has been and continues to be made.

2—Lack of Flexible Linkage.

Single management proponents have stated, for example, that in the event of a catastrophe in the Washington area, there are not enough inter-connecting links to insure that surviving forces of one service can use the surviving communications facilities of any other. The facts are that military needs in the Washington area in the event of an atomic strike here have been carefully planned to provide adequate depth and backup to permit any of the military command posts which remain operational to use alternate communications outlets.

3—Money without coordination.

The people who are pressing for single management have questioned the desirability of spending large sums of money for communications without full coordination. So does the "other side of the house" obviously, but it points out that since 1949 all three Services have participated in a program of coordination under Joint agencies. Even if they weren't doing this on their own volition, DOD Directives require them to do so.

4—Single service management.

The fourth popular allegation attempts to make a case for extending the principle of single service management



MCEB members Grant, Nelson, Dreyfus, Virden and Bradshaw

MCEB: Part of the Answer?

The idea that communications-electronics be placed under single managership is nothing new. It was first proposed formally to defense top administrators in 1949, was turned down because all three services were against it. Until the latest formal proposal, the idea frequently had come up informally ever since.

How is communications being handled today? Keys to management and control of the joint communications network (JCN) are two outfits: The Military Communications-Electronics Board and the J-6 (communications-electronics) Directorate in the Joint Staff. Workhorse of the two is the MCEB, dating back to the outbreak of World War II.

At that time, there was no formal machinery for the services getting together to solve many details attendant to inter-communications, no common procedures or manuals.

The military answer was a Joint Communications Board for U.S. military communications problems and a Combined Board for handling communications details with Canada and Britain. Forerunner to the Joint Chiefs of Staff setup, the JCB, was immediately involved in a lot of pick-and-shovel mundane work (even as MCEB is today). It was, nonetheless, very important. JCB became involved in equipment, procedural, even research and development problems, was completely responsible for communications people in the military working together.

Following the war, the outfit changed its name to the Joint Communications-Electronics Committee. Some of its tools, such as R&D and Materiel functions were taken away. Except for that, it continued to function as the JCB had done before, although one Board member now wore an Air Force uniform.

The debate in 1949 on setting up a single manager ended with JCEC retaining its authority, being given a small permanent staff and its chairman receiving the power of decision—unless all three Services voted unanimously to send a matter to JCS.

The present MCEB is a result of the necessity to conform to the JCS changes in the 1958 Reorganization Act. Only addition, which one wag said was a direct result of Parkinson's Law in operation, was that the chairman was given a larger staff. First cut at the J-6 personnel need came up with a number "well in excess" of 100 which "completely shook the Joint Staff director" since he knew it would throw him way over the Joint Staff manpower ceiling.

The answer was a J-6 outfit, backed up by the MCEB. The solution was popular primarily because it would hold the J-6 down to the ceiling limits, still provide enough people to get the work done.

MCEB is sub-divided into eleven panels (made up of 207 principal and alternate members with full authority to bring in others when needed) who handle

the work, were, in fact, taking care of military communication problems on a day-to-day basis even while all the reorganization was going on.

The Panels: Aids to Navigation Panel; Call Signs Panel; Communications Circuit Engineering Panel; Strategic Communications Plans Panel; Communications-Electronics Plans and Policies Panel; Communications Publications Panel; Electronic (Radio) Warfare Panel; Electronic Warfare Panel; Equipment and Standardization Panel; Frequency Allocation Panel; Methods and Procedures Panel; Security and Cryptographic Panel; Test Equipment Sub-Panel; Warning and Target Information Panel.

Most communication problems are technical, day-to-day problems, require that the people involved stay very close to the work or they lose touch. Frequency allocation panel alone handles over 2000 headaches every three months, maintains member contact through inter-connected hot telephone lines, may sit down to a formal meeting only once every week or two.

Top MCEB crew: Maj. Gen. J. Dreyfus (Chairman) and Maj. Gen. R. T. Nelson of Army, Navy's RAdm. Frank Virden, Air Force Maj. Gen. H. W. Grant and the Marine Corps Col. J. T. Bradshaw) has a group of joint coordinators who handle the paper work, serve as panel monitors. J-6 takes on the less technical problems.

The MCEB is actually the closet thing to a truly unified group working anywhere in the military, has been doing a unified operating job for some time. One probable key to its success: the men working on the panels as well as the five top board members are, in their respective services, responsible for the C-E business, must see once they agree to something that it works.

MCEB was tagged a "board" because of the wide spread feeling at the time of 1958 Reorganization that anything called a committee is incapable of taking prompt and effective action. However, any analysis of the MCEB record and the way it operates today cannot, in all fairness, leave it charged with deficiency. Far from being a debating society, MCEB has become a very necessary and successful activity.

The majority of the problems it has failed to solve on a joint cooperative effort have been concerned with difficulties having overtones of service differences extending beyond the communications field. One blue ribbon: on a project which it is still thrashing out, MCEB has managed, so far, (over the objections of the service involved) to forestall expenditure of \$50 million in additional communications facilities, has maintained, (with full approval of the representative of the service involved) that current facilities in the area concerned are adequate.



As an added headache for communications planners who think in terms of single management, there are the many requirements that are unique to one service—the headaches that cannot be reduced to a common denominator.

into the communications field. The inference is that single service management, which has been applied with success in logistical areas, would obviously be good for communications-electronics. In many cases, communications-electronics have become so much a part of the weapon system itself that they cannot be considered separately. For example, it has been reported that, conservatively, less than 20% of Air Force communications are not directly integral to their combat capability. It is this small percentage that carries the "Western Union" type of message traffic that most people, including single-communications-manager believers, normally associate with communications. "It is unthinkable that the command and control element of such modern weapon systems as ICBMs or thermo-nuclear bombers be in any hands other than those of the service responsible for weapon systems use."

Who to make single manager? Here is a key reason the critics say no one Service can do it effectively: while the Army has operated military communications over a span of years which far exceeds other Service activities in this field they actually lack experience in handling the type of ultra-rapid global-communications required for air operations. Air Force plans depend on quick reaction on a global basis with a minimum of warning. To hit the 15 minute maximum alert posture of air combat units only 90 seconds can be allowed for communications. This is a degree of communications responsiveness unparalleled by any other operational military requirement. Moreover, just over the horizon is an increased complexity resulting from the control of manned and unmanned aerospace vehicles at the same time.

Because of their longevity in classical communications, the Army is probably at least an equal of anyone in that field. However, their own stringent requirements have caused Air Force to develop an air communications complex which is several times the size of that operated by the Army in all major aspects. Some examples (obtained from published Congressional testimony, budget hearings, etc.): government-owned facilities, leased commercial facilities, secure channels, and miles of high quality wide band channels. Also the Air Force, say the challengers, have achieved notable firsts in military communications—which any examination of the record will prove. They feel that this record amply demonstrates the forward looking, progressive thinking that has characterized Air Force communications for over a decade. So, who gets the job?

Plan proponents have singled out the Signal Corps as well suited for the single management function. "The crux of their argument appears to be that a technical service is superior to other organizations." However, the attackers are convinced that such compartmentation of communications functions tends to isolate the manager from operations and fosters "communications for communications' sake."

Both sides agree that a management mechanism is required to insure the most effective operation of our strategic communications systems and resources. This need was clearly enunciated by the Joint Chiefs of Staff when they established the concept of a single, integrated communications network this past summer. The Joint Chiefs indicated that the network—designated as the Joint Communications Network (JCN)—would be developed on an evolutionary basis by making maximum use of existing resources within the Defense structure and by using the military services to operate the network. The plan critics heartily subscribe to these principles and add that in their opinion it is only logical to manage the network on a tri-Service basis.

The Plan critics feel that, by their very nature, strategic communications complexes of the military Services are joint and should be managed on this basis. Even if the services were placed in a single uniform, a proposal that has been kicking around for several years, separate communications complexes would still be needed, says the opposition, to respond to the unique requirements of the particular weapon systems of which they are an integral part.

Fact Sheet:

Size of the C-E Field

The field under "how-to-best-control" debate in the Pentagon is no small item. In Air Force alone, the communications-electronics portion of the total budget each year has climbed from \$116.7 million (about 2.2% of the total) in 1952 to approximately \$1 billion dollars (over 6% of the total) today—approximately a thousand per cent increase. Said one officer, "It is more than probable that the future trend will be just as remarkable."

Among the significant logistics:

	Army	Navy	Air Force
Capital Investment (excluding wide band facilities)	\$350,000,000	\$217,000,000	\$452,000,000
Leased Commercial Circuits (FY 1960)	\$ 30,000,000	\$ 9,800,000	\$117,000,000
Voice Channel Miles (for above item on contract with American Telephone and Telegraph)	\$ 1,000,000	\$ 355,000	\$ 4,000,000
Wide Band Systems (investment)	\$ 32,000,000		\$584,600,000
Funds Programmed for Wide Band	\$ 22,000,000		\$273,000,000
Wide Band Route Mileage (existing and planned—approximately)	\$ 254,000		\$ 1,321,305

Sidelight: Compared to RCAC, one of the largest U.S. international communications companies, Air Force alone has a high-frequency radio air communications effort fourteen times larger than RCA, employs three times as many people as RCA to process twenty times the RCA traffic.

• Navy wide band assets are, at the moment, insignificant for the simple reason Navy has no requirement for it.



Aircraft and missile work will be mated in BuWeps

"More Logical Spending" For Navy's Weapons

*Navy's new BuWeps
offers a new
approach to weapons
development and
production*

by Fred Hamlin

CONCENTRATION is probably the single word that most closely sums up the new Bureau of Naval Weapons—in its beginnings, its actual forming, and its plans for the future.

By the very nature of BuWeps, the idea of concentration is implied, in the consolidation of the efforts of the Bureau of Aeronautics and Bureau of Ordnance. It was sheer concentrated effort which enabled the Organizational Planning Group to set up the new bureau some seven months ahead of the original deadline. And it will be through selective concentration on the best possible weapon systems that the new bureau will be able to give the fleet the best possible support, with most efficient use of dollars in the future.

In meeting the first two of these three areas of concentration, and in preparing to meet the last one, Navy has had to weld together an organization which will handle two-thirds of all Navy material, two-thirds of Navy's shore establishment, and two-thirds of Navy's research and development effort, by dollar volume.

Well over 200,000 people will be involved, and the final result is some 25% larger than its nearest Navy rival for size—the Bureau of Ships. Because of its basic formation, it will be what is probably the largest true corporate organization in the world. Under its control will come some 38 weapon systems projects, eight supporting systems and all of the related efforts needed to keep these projects going.

Managing a merger of this size—and doing it in less than half of the time originally allotted for the job—offers a task of fantastic proportions, and one which would be virtually impossible with no hitches. It is remarkable that marrying the two bureaus has gone as smoothly as it has.

Responsible for the actual setting up of the details of the merger was an Organizational Planning Group, under VAdm. E. W. Clepton, Chief of Naval Material, with his full-time Deputy, RAdm. Charles Martell. It was Martell who decided not to go slow on the actual merger, and it was—according to BuWeps sources—largely through Martell's efforts that the timing on this major organizational change was shaved by seven months.

In its report, the committee settled on a scheme or organization that would probably look something like a tic-tac-toe paper on a flow chart, combining the best of horizontal weapons control with overall vertical program planning and guidance. Under the organization, responsibility for actual program completion will be handled by five Assistant Chiefs for (1) Research, Development, Test and Evaluation, (2) Production and Quality Control, (3) Fleet Readiness, (4) Field Support, and (5) Contracts. Generally following the new Congressional budget structure, the set up in this area allows for close liaison with the fleet, cradle-to-the-grave control in the fullest sense, and absolute professional control of the touchy area of contracts.

Guiding these efforts, and providing the resources to get them done, will be the Assistant Chief for Program Management. What he will do is approximately to provide the sort of vertical program control that is proving so effective with the Polaris missile program.

Because of the dollar volume involved, coupled with the stake in national survival that rests with BuWeps, it is worth taking a careful look at the way in which the largest of the Navy Bureaus works. In good reporting, as well as any sort of a competent business operation, the questions that must

be answered are Who, What, When, Why, Where and How. As a point of reference, this is perhaps the easiest way to describe BuWeps operations, and the manner in which its business is handled.

Teeth of the BuWeps effort rest with the Assistant Chief for Program Management, charged with the Who, What, When, Why and Where of the many BuWeps weapon systems. More specifically, this responsibility falls with the Assistant Chief for Programs and Management Plans. This office is divided into three sub-groups, for Planning, Analysis and Review, and Data Processing Policy.

The first of these offices is responsible for translating the requirements of the fleet into terms that BuWeps can work with, and then parcelling them out to the operating Assistant

Chiefs (RDT&E, P&QC). The Program and Management Plans group is basically the organization that will guide the project in question from idea-to-disposal, while at the same time making sure it stays within the various limits imposed by other Bureau commitments.

The Lines of Control

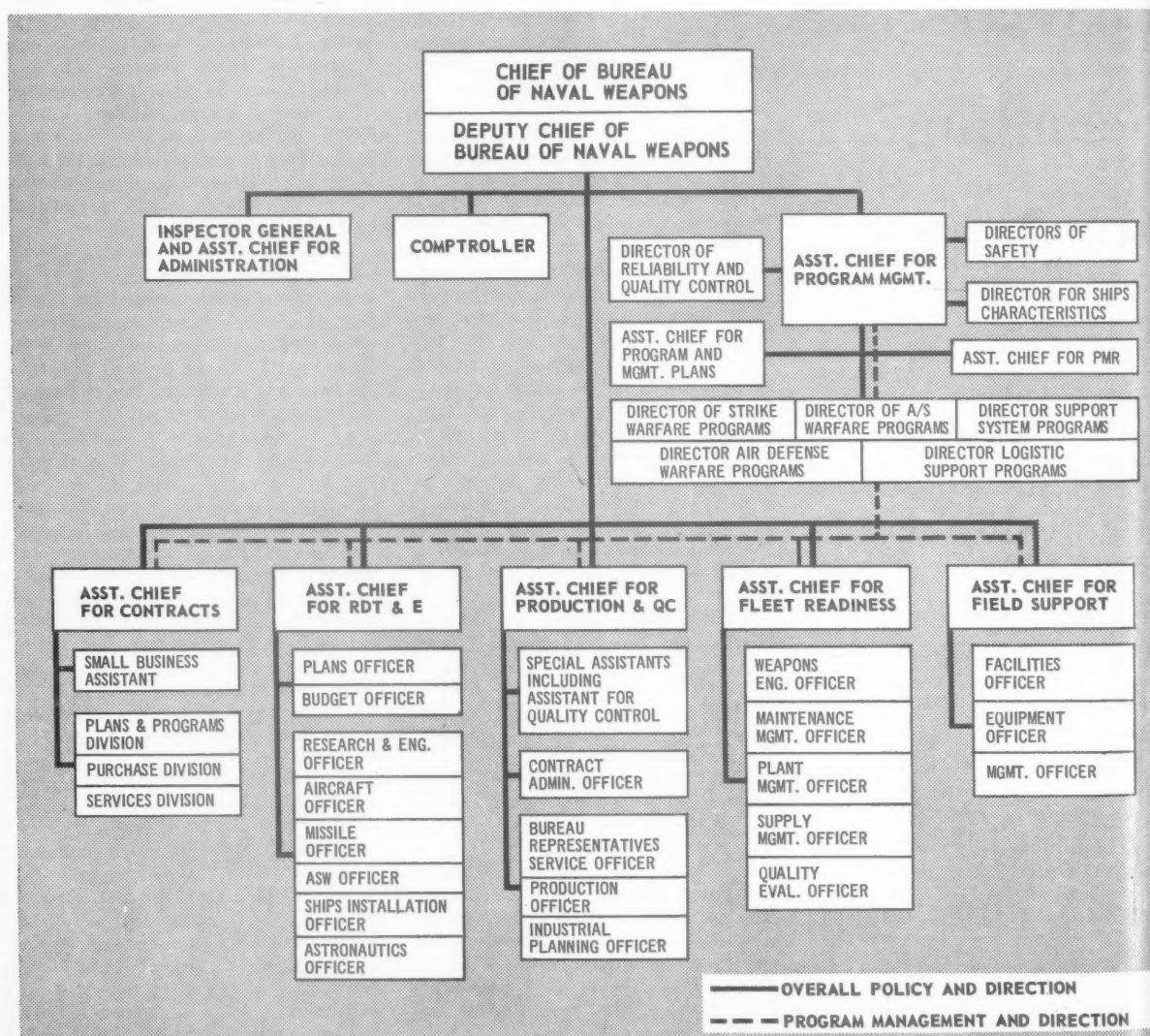
It is significant that the Assistant Chief for Program and Management Plans is Gordon O. Pehrson, who transferred into the new bureau from the eminently successful Polaris Fleet Ballistic Missile Program, which is perhaps the outstanding Defense Department example of successful vertical program management.

On the organization chart for the new BuWeps, there are two lines on

direction and control to the operating Assistant Chiefs. One from the Assistant Chief for Program Management and the other direct from the Chief of the Bureau, RAdm. P. D. Stroop. The second of these serves to answer the all important question of How. For the quality of their work, and how closely they are following the schedules set forth by the Assistant Chief of Bureau for Program Management, the operating Assistant Chiefs are directly responsible to the Chief of the Bureau of Naval Weapons.

As if stressing the close relationship between program management and financial management, the new BuWeps at one embryonic point was faced with a decision on whether the Comptroller for the organization would be included within the office of the Assistant Chief for Program Management. But it was

The Organizational Picture . . .



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decided that it would be better to maintain the Comptroller as an autonomous entity within the BuWeps structure.

This only underlines the need for a close relationship between the two organizations, and that the dispute should have been raised is an indication of how close the relationship would ideally be. The compromise was a logical one, and one which will allow enough freedom, and yet enough centralized control, to keep BuWeps on an even keel.

The combination of vertical and horizontal control is a relatively new one, and one which should attract considerable attention throughout the Defense establishment. But those who watch it will be doing so more with curiosity than with apprehension. As opposed to the Army and the Air Force, Navy will be working with a combination management arrangement—one which will provide what is basically the same as the weapon system concept, while at the same time allowing—as, for instance, the Air Force ARDC/AMC system does not—for not only cradle-to-the-grave control, but conception-to-resurrection management cognizance at a single point.

Among the advantages in handling the BuWeps programs in this way: it will tend to make coordination with the CNO/consumer side of the Navy easier, because of their recent reorganization to warfare-type lines; it will make reporting on program progress somewhat easier, and therefore give BuWeps better information for go-no-go production decisions.

Also, it would probably be through close program control that BuWeps will be able to make its greatest advances against lead times on the projects it will be working with, and the greatest headway in program cost control through prompt, accurate reporting.

Why Cost Control?

It is in this area of cost control that the most immediate efforts of the Bureau will be directed, according to Bureau Chief RAdm. Paul D. Stroop. The main line of attack will be directed at getting prompt decisions on all research projects before they reach the heavily expensive pilot or advanced production stage.

Says Stroop: "Research and development really isn't very expensive, and it's possible to learn a great deal in this area. We can't afford to spend money on indecision, and as soon as you go into early production, your design change and spare parts bills begin to climb. We are going to be pretty hard-nosed about these decisions. I mean

about letting research projects go into production too soon, or letting them go if they aren't about the best we can find for our money."

In another area of cost control, BuWeps will rely more heavily on engineering specifications, as opposed to performance specifications. On performance specifications, the buying agency says "We want something that will sink battleships," while on the engineering type specs, the request for proposals is in much greater detail, spelling out just about exactly what the buyer wants, from the smallest electron tube on up.

Reliability Stressed

With the performance specifications, the end product is usually cheaper to begin with, but tends to have a higher spares replacement level, and generally is somewhat less reliable. On the other hand, the engineering spec tends to produce an end product that offers greater dependability, a better spares picture, and generally—because of the detail involved—comes closer to being exactly what the buyer wants.

In quality control, Stroop says BuWeps will be looking for extremely high reliability in component parts which have a better-than-average interchangeability. He adds, "This is pretty basic in all of our guided missile work, and we must insure every possible component to the maximum."

In one other area of the war on costs, Adm. Stroop says his bureau will try to work more with the technique of letting production contracts after the research work on the project in question is completed—and not necessarily to the contractor who has done the research work. Citing Sidewinder as a case in point, Adm. Stroop points out that the current cost on that missile is only about \$2500 per round, and that the reliability of the missile has more than proven itself over the Formosan Straits.

What these programs will mean to industry and to BuWeps itself is also outlined by Adm. Stroop. "We will find ourselves making fuller use of our government laboratory facilities, particularly in specification and support requirements." For industry, the emphasis on costs will mean stiffer competition, and a situation in which only the best product will be bought.

Beyond that, Adm. Stroop points out that "it's not all black for industry. We'll still be spending about the same amount of money—it's just that we'll be spending it more logically. Anyone who wants to check can find out that our budget has been about the same for the past few years." Stroop feels that this new way of doing business will allow Navy—through BuWeps—

to buy more of the weapons that it really needs, by saving on abortive production attempts on projects that have not been thoroughly proven in the research stage.

At the present, the guiding influence for BuWeps programs seems to be vested with the Assistant Chief for Program Management, RAdm. Charles T. Booth. In this job Booth will provide vertical control. He will outline what is needed from the operating Assistant Chiefs, and will give them the timing guidelines they will work with. In their report, the Organizational Planning Group heavily underlined the desirability of vertical organizational control on selected priority programs, but rejected it because of the compartmentalization of skills that would result.

But in spite of this, the designers of the organization of BuWeps did all that they could to inject a strong element of control. As a result, the Assistant Chief for Program Management will be responsible for planning and executive direction of bureau programs, including the assignment of the resources involved (facilities, people, money, priorities).

The Program Manager

He will provide the directives needed to guide the other Assistant Chiefs in their planning and actual work on Bureau programs. He will also work with directing implementation of the programs, and with directing program changes to meet objectives. He evaluates the status of programs on performance, timing and cost, and reconsiders operating needs related to these factors.

Adm. Booth also will plan, coordinate and integrate BuWeps management systems, and, he will revise, approve and reprogram BuWeps funds, in connection with the many programs the bureau must handle.

To handle this job, Adm. Booth will have an Assistant Chief for Program and Management Plans, Directors of Safety, Quality Control, and Ships Characteristics, and on the program level, Directors of Strike Warfare, Anti-Submarine Warfare, Air Defense Warfare, Support System, and Logistic Support Systems, and an Assistant Chief for the Pacific Missile Range.

Taken together, the Navy's new BuWeps is progressive enough to offer an experiment in modern weapon system management. And if the rapidity with which the organization was set up is an indication of how it will run in the future, it is an experiment that can only be successful throughout its span of life.

Familiarity Breeds Good Recruiting

A sound basis for a continued supply of scientific/engineering personnel is being developed by Army's Engineer Research and Development Laboratory...

by Robert D. McMarlin

Civilian Personnel Officer
U.S. Army Engineer Research and
Development Laboratories
Fort Belvoir, Virginia

CONCENTRATION on colleges within a certain mile-radius is beginning to improve recruitment of college graduates for engineering and scientific positions at the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

The Laboratories—principal research and development field agency of the Corps of Engineers—employ about 1400 civilian engineers, scientists, technicians and supporting personnel. The scope of work is broad, embracing practically every known field of engineering. The mission is to develop new and improved Engineer equipment for the Armed Services. Like every agency of its kind, it has experienced difficulties in obtaining engineering and scientific personnel.

Late in 1957, a review of scientific and professional personnel showed a very poor situation at the Laboratories, with strength at 402 against allowed spaces of approximately 430. Analysis indicated a loss of from 10 to 15 per cent or 40 to 60 per year, with more than one-half of the losses in the grades of GS-11, -12, and -13.

Experience at these Laboratories, and other Corps of Engineers installations, has shown recruiting for quality personnel in these grades to be fruitless. Consequently, a policy of quality selection was set with long term objectives of growth from within, and providing an annual replacement of about 60 per cent of losses with young college graduates.

At this time, the Civilian Personnel Office and the Laboratories' Directorate had come to believe that it might be more profitable from the standpoint of results to discontinue the Laboratories' long standing practice of recruiting at many colleges throughout the country, and rather to concentrate on a few in a limited geographical area. Accordingly, 18 schools within a 200-mile radius were selected for the 1958 schedule.

Schools selected for concentrated effort were Virginia Polytechnic Institute,

Clarkson College of Technology, University of Vermont, University of Maine, Cooper Union, City College of New York, Pratt Institute, New York University, Virginia Military Institute, Clemson College, University of Pennsylvania, North Carolina State, Lehigh University, Rutgers University, University of Delaware, Stevens Institute of Technology, Brooklyn Polytechnic Institute and Drexel Institute of Technology.

Programs developed to make the most of college graduates as a source of engineering and scientific personnel made it necessary for all members of the Laboratories' Directorate and senior supervisors not only to give their whole hearted support, but to participate actively in the recruitment.

College recruiting in 1958 netted 36 individuals from 15 schools. Although shortages existed in certain fields such as electrical engineering, additional personnel could have been obtained in certain other fields. While easing of industrial demands for engineers and preplanning contributed to the effectiveness of the 1958 program, it was felt that the biggest single contributing factor in the success of concentrated recruiting schedule was the participation by members of the Directorate. The Director of Research or the Director of Applications Engineering accompanied Civilian Personnel representatives on each trip to discuss technical aspects of employment with students and faculty members. In '59, the previous year's hires were included in recruiting trips to their alma mater.

The year 1958 also saw at the Laboratories the first step toward a long range campaign to develop a beneficial relationship with the authorities of the colleges on which recruiting efforts are being concentrated. It had long been the opinion of those involved in recruiting, and is indeed the basis of the USAERDL recruiting program, that those agencies who have achieved rapport with a college and who go back to the same college year in and year out, usually have greater success than others who do not pursue this course of action.

USCS Departmental Circular 935 on the subject, "Requests to College Faculty Members to Visit Federal Installations to Confer on Recruitment"

provided a means, hitherto untried, to achieve this rapport. Accordingly, Deans of Engineering at the schools on the recruiting schedule were issued an invitation for a three day visit to the Engineer Research and Development Laboratories.

The program for the visit was arranged by the Recruiting Advisory Committee made up of assistant department heads, the Civilian Personnel Officer and the Chief of the Recruiting Division, Civilian Personnel Office. It included a tour of the installation, introduction to project engineers as well as top scientific and engineering personnel, and briefings on Lab projects.

In the opinion of the deans attending, the visit was well worthwhile. They left with a real enthusiasm and appreciation of the opportunities afforded young engineering and science graduates at the Laboratories. The scope of work and the real opportunities for interesting career were things they had not realized before the visit. The many challenges in research and development work in government laboratories in general and in the Engineer Laboratories in particular were vividly brought to their attention.

While the total of 29 recruited from the June '59 class lacked six of our objective of 35, it represented a substantial increase over results achieved during the years immediately prior to the initiation of the program. More evidence of the benefits of establishing rapport was seen in the number of students presenting themselves for interview. Prior to launching the program of establishing a firm relationship with a few schools, it was not unusual for a recruiter to find upon arrival at a school that only one or sometimes even no candidate was interested in discussing employment at USAERDL. Another indication of success in achieving rapport has been found in responses to invitations to Placement Officers of the same schools who attended a similar meeting in October, 1959.

It is felt that these visits are a most important step in cementing relations with educational institutions to provide that continuity of recruiting which familiarizes the school with the agency seeking employees, and is tantamount to the ideal in recruiting.

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For complete information on the RCA 501, or to make arrangements for a visit to the RCA 501 Electronic Data Processing Center at Cherry Hill, New Jersey (near Camden), address **RADIO CORPORATION OF AMERICA, Electronic Data Processing Division, Camden 2, N. J.**



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JANUARY 1960

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How Mobile are our Global Reserves?

A complete rundown of the results of Air Force work in a tough problem area

by Gene E. Bradley

TODAY'S military and business managers are teamed up to crack one of modern warfare's toughest barriers: time and space. Their combined objective is no longer just shrinking the globe, but literally eliminating the time-space problem.

We're actually "going backward in time," stated Air Materiel Command's J. N. Cunningham, civilian assistant to the director of maintenance. "Our forefathers had the musket on the wall, and the powder and shot to go with it—to be ready if the Indians came." Missiles have replaced muskets—and today's "reds" are Communist, not Indian—but the logistics objective is the same: instant readiness to deter any attack anytime anywhere.

"The logistic systems of Alexander, Napoleon, Grant and Eisenhower all had the same reasons for existence," reminded Maj. General Frank A. Bogart, AMC's director of plans and programs, "and history records somberly that when logistics has failed, combat forces were destroyed.

"In World War II the combination of tremendously large forces, complex equipment, great distances, relatively slow transport, and voice and teletype communications resulted in an air logistics structure consisting of huge repair facilities and massive stores of stocks deployed all over the world."

Logistics progress between revolutionary days and World War II was ridiculously slow. In 1776, average time for moving supplies (via horseback and wagon) was about 1.3 miles per hour. In World War II, it took an average 106 days for a combat commander in Germany to order and get an item from the U.S.; average speed was only up to about 3.5 miles per hour.

Massive armies, stocks and industries are as outmoded as B-17's, and so are their logistics systems. As we enter an era when warning time will be less than a 15 minute television program, when entire wars will be

decided in far less time than old procurement cycles, it is fair to ask:

(1) How far have we come in the past decade in streamlining our logistics system?

(2) Can we pin down case histories of increased mobility?

(3) What has been the role of businessmen in these case histories?

(4) Exactly what management innovations have been introduced, and how well have they worked?

(5) What are our future plans and problems; in short, what does it take to win?

For answers, we researched AMC Headquarters at Wright-Patterson AFB, Ohio—an unglamorous, sprawling administrative headquarters which looks as ponderous as the problems it has to lick. It is a paradox that AMC and many industries supplying it—dedicated to 365-day, around-the-clock, worldwide sensitivity to deter aggression—are plunked down in the heart of what was once America's isolation belt. This region has now become a U.S. Ruhr—a misnomer only because it is an understatement, with the Ohio Valley today more industrialized than its European predecessor.

The Big Picture

For the feeling for the total job, collecting the many pieces which, when assembled, would be the AMC logistic picture, we went to former AMC Commander Gen. E. W. Rawlings. While retired he is still being called back to the spotlight for counsel on USAF's biggest, costliest job. The balance of this article is an interview with Gen. Rawlings, with key points documented and expanded by the AMC staff:

Question: Gen. Rawlings, will you please pin down your interpretation of logistics and why it is so vital?

Rawlings: "Logistics is a military term used for centuries. What it really means is the military function of pro-

viding the equipment, the implements of war and the support required for the combat man to use effectively in combat. And of course logistics becomes ever more important as the technology of our weapons improves and increases.

"It would be a sad day if we developed all of these high-priced, high-powered, complex weapon systems and were unable to keep the maximum number ready to go at any hour of the day or night, or any day of the year, with a minimum of resource. I like to state economy in a little different sense than we normally think of it—in a military sense of getting the most out of everything available, wasting nothing in the process. I call it maximizing of resources."

Question: In terms of global mobility to meet all emergencies, can you measure our progress from World War II, to Korea, and today?

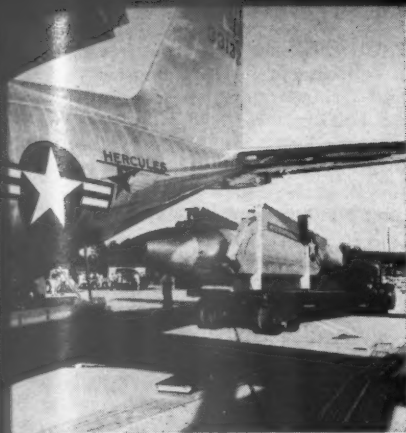
Rawlings: "This question relates to the advancement in our weapon technology. At the end of World War II, our weapons capability—range, speed and so on—was such that we had to position them overseas, with large stockpiles to back them up and long pipelines of materiel.

"When Korea occurred, we were somewhat in the same position.

"Since then, we have significantly increased our weapons range; had greater developments in atomic weapons themselves (which have such tremendous power that we can employ different strategy and tactics); and tried to keep our logistics system in tune with these advances and weapons. And therefore today I think that we're in a position to support our forces adequately with atomic weapons, without huge equipment stockpiles and long costly materiel pipelines."

To document these advances, AMC offers three examples:

(1) From a once-secret report by Lt. Gen. William F. McKee, AMC



Vice Commander, on overseas support: "Our experience . . . indicates that the average time lapse between requisition and receipt of supplies, using direct support procedures, is 15 days. Our objective, as we grind the system finer, is 7 days. Both are a heartening improvement upon the 106 day overseas support cycle at the close of World War II."

(2) From J. J. O'Donovan, assistant to AMC's transportation director, in reference to reducing time on selected items: "We now deliver engines in 8 days"—including time needed for the field commander to say what he needs, to requisition it and to have it delivered.

(3) From another AMC office, referring to increased airlift capacity needed to permit reducing this cycle time: "We are assured that today's lift capability is 6 to 7 times larger than that of the 1950 fleet."

Objective of this fast-delivery is not so much to "pass the ammunition" to troops under fire, but to keep those troops so combat ready that fire does not occur in the first place. As O'Donovan states it, "We are now increasing the combat readiness level, in peacetime, of these forces, so that they can sustain themselves to a large extent during the initial phase. What in essence I am saying is that much of the transportation job must be accomplished pre-D-Day."

We asked Donovan if Air Force wasn't attempting to overextend its airlift capacity: on D-Day, could it support both Strategic Air Command and troop shipments? His reply: "We are getting the kind of airlift capacity we need; we don't have to deploy troops at the same time that we are deploying SAC. And conversely for limited wars, we aren't deploying SAC while deploying troops."

Question: To illustrate your new mobility, can you cite any striking examples, such as Formosa?

Rawlings: "There was no prior plan-

ning for this particular operation. We were able to disassemble the aircraft (Lockheed F-104 Starfighters), put them in transports, fly them to Formosa, reassemble them and have them flying in just a few days. It was very spectacular, when you think of what we could do a few years back—when you would have had to put them on carriers, or some other type of vessel, and probably take several weeks or a month to get them out there."

"Spectacular" may seem mild, when it is remembered how close America then seemed to war's brink, with the Chinese Communists declaring their intention for immediate Formosa invasion. The F-104's arrival was a much-needed show of strength.

For the industry side of the F-104 Formosa story, we visited General Electric's jet engine plant at Evendale, Ohio, home of the J79 engine powering these Starfighters. In a series of meetings with both General Electric and Air Force plant representatives, we learned:

Civilian Cooperation

Civilian tech reps had to fly into action with military precision. G-E service man John Conners states it took just six days from first alert in Cincinnati until tech reps were at the operating station with flying aircraft.

It was a "round-the-clock operation right there in the aircraft hangar . . . true not only for the first aircraft but for all of them when they got there," Conners said.

Once flying, aircraft were highly effective. From Conners: "Within about three weeks after the initial arrival on Taiwan (Formosa), the squadron flew approximately the same amount of time, or greater, than the two 'high-time' Air Defense Command Squadrons in the States. They did this with approximately half the number of aircraft at their disposal."

As for the engine's maintainability, Conners said, "I put a direct question to the squadron commander, and he said that he had not anticipated as few maintenance problems as he was getting, and was quite pleasantly surprised at being able to maintain his relatively high in-commission rate."

Final comment from Conners was that the appearance in Formosa of the F-104—the needle-nosed, stubby-winged, Mach 2-plus plane which in quick succession broke the world's speed, altitude and time-to-climb records—"had a distinct morale-building effect on the Chinese military."

This direct support of combat operations, which has made it possible to wipe out overseas depots, is a management innovation. It makes the military

manager's role more important because he must become a skilled logistician and businessman. Conversely, the businessman-contractor has had to learn to phase his operation with the military.

Question: Will you please pinpoint the management innovations which have contributed most directly to logistics progress?

Rawlings: "First we should again define what we're talking about when we speak of logistics support—and this is where the major difference lies between this operation and a business operation *per se*, even though many aspects of logistics can be compared to business. We in the Air Force logistics business exist for only one purpose: to be certain that we can support the combat forces 24 hours a day, around the clock.

"We could probably run our big depots very efficiently if we just laid them out as factories with production lines and so forth. But you might not get the equipment in the right place at the right time and therefore the whole thing would be lost, which certainly would not be economy.

"The most significant thing is getting this concept across. This idea. This is the only reason we're in business. And once you get that idea across, then it becomes a matter of better understanding between the combat man and the man that must support him in this complicated age.

"Decentralization was probably the most significant step to improve reaction time of our logistics system. We delegated authority and responsibility down to the depot and Air Materiel Area level where they were in closer contact with the man using the equipment."

Question: How does this parallel industry?

Rawlings: "Our experience is parallel to that of many business decentralizations. We have to be very careful when we speak of decentralization: we've tried to decentralize the operating function, but we retain a highly centralized over-all management control and follow-up system to be sure that they're picking up the ball and doing the job.

"When we embarked upon this program, we studied all the decentralizations of big business that we could find. I was very interested to see when Ralph Cordiner published his book on this, a compilation of lectures at Columbia, that the considerations that we had gone through were almost parallel to the ones that they went through at General Electric. Of course the fundamental difference is that we were trying to get fast reaction time, develop

people with more capability and that sort of thing, where their objective was to have a more successful business operation."

Question: Is this what you are saying: that the same principles apply even though the end objective is different?

Rawlings: "This is right, but this also is a danger. That's because it becomes very easy for someone who is not familiar with the military to see a few of these things and say, 'You can run it just like a business.' This you can't do precisely. You can use business methods, but you must constantly keep in mind this fundamental of why you're in business."

Industry respect for Gen. Rawlings' decentralization program was indicated by Convair vice president Augie Esenwein: "He has unquestionably saved the Air Force a great deal—both in time and money—by applying sound management principles to the huge operation."

It's impossible to compute precise dollar savings, but AMC estimates that

—thanks to modern materiel management—it has been able to reduce its money requests to Congress by well over \$6-billion since 1951.

How decentralization has saved time is brought home by the Logistic Support Manager Concept. This provides the combat commander with a single phone number, plus air delivery for anything his weapon system might need. This is in happy contrast to the all-too-familiar and antiquated process of requisitioning many items from many depots, then sweating out shipments, with planes sitting out of commission on taxi strips. With the Logistic Support Managers in the U.S., there is full management responsibility for an entire weapon system.

Air Force's Objective

USAF's objective is to whittle down AOCF rates (aircraft out of commission because of parts). Strategic Air Command was running about 14% AOCF during the Korean war; at the time of these interviews, 1% or less.

TAC's rate had been more than cut in half, except for certain priority aircraft where objective is zero—and has been met for as high as 45 days at a time.

"Suppose there is a difficulty in an aircraft part, perhaps a fatigue or structural failure," suggested Maintenance's J. N. Cunningham. "The appropriate Air Materiel Area puts a man on the problem, who does two things: expedites the action by working with the contractor, and then approves the fix. The theme is that we aren't trying to prepare for mobilization, but to keep ourselves ready to race always. At Indianapolis, there is one race a year—and the boys spend a lot of time getting ready for it. In the Air Force, we are trying to be ready for a race anytime anybody wants to run it."

The far-reaching effects of decentralization are evident: namely, more men have more authority at more decision points throughout AMC's chain of command and more aircraft are constantly combat ready.

Question: If decentralization is the

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first key innovation, what would you say comes next?

Rawlings: "Probably next, technological development. Many things that we have done could not have even been considered, if we hadn't been in a period of many technological advances in the business world in terms of aids to better management.

"I'm thinking of more rapid communications and systems, the use of transceivers, the sending of business information over punch cards at a very high rate of speed, the development and use of computers to analyze these data. The magnitude of this business is such that we have a better opportunity of capitalizing on some of these things in a business way. You can afford to take some risks since the gains will be very great.

"As a result of the technological development of business aids, we have been able to do other things important in shortening the pipeline and cutting the investment in stocks—such as using the techniques in major equipments that the life insurance companies use

with people. For example, an actuarial system of predicting engine life and overhaul times. This can save (and did save) millions of dollars, because we were able to forecast much more closely what we would need, the wear-out rates, and so forth.

Summing It Up

"On direct support: we probably couldn't have gone to it if we hadn't had these technological advancements. It used to take on the average of probably 10 days for a requisition to come from Europe back to the depot. With transceivers, this actually occurs in seconds.

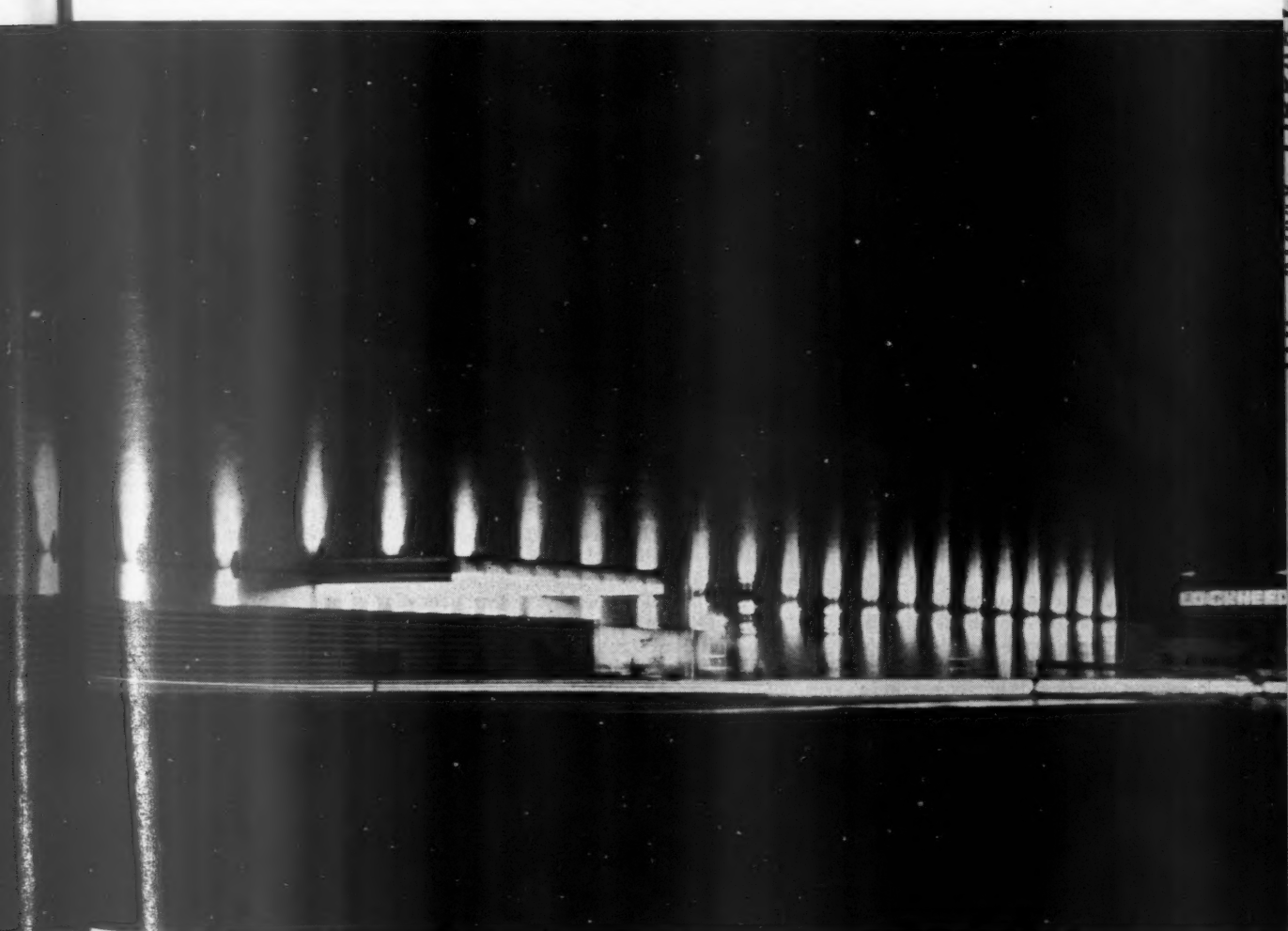
"There have been many other things. Logair. Many people think that this is a military air transport service. It is not. It is a contractual service of procuring supplies from our depots to our major combat organizations, thereby cutting pipelines. The time factor becomes even more important as weapons get more complex and the rate of change becomes great, because you

could end up with big stockpiles of obsolete material much more rapidly."

Question: Summing logistics progress to date, do you feel we have come as far and as fast as we should? And what more should we be doing?

Rawlings: "Let me say this: any time we're satisfied with what we're doing, you'd better get rid of us. There are always things we can do to improve our method of operation. I think we have made great progress, but unless we continue to make progress, we'll regress.

"I don't know precisely what we will find, but I'm sure that with the right kind of thinking (and we've got people capable of it), we'll find other things that we can do, other technological developments in equipments to help us with our problems. We'll get more adept in learning how to state the problem to the machines and we'll know more what to do with the answers. So I don't by any stretch of the imagination think that we're at the end of the line of where we should and can go."



Part II

The System Approach To Defense Contracting

In Part I of this series of three parts, some of the background and history leading up to the use of and emphasis on the system approach to defense contracting was reviewed. In this part, those fac-

tors claimed as advantages or disadvantages by various persons or activities will be cited and discussed. The highlights of several months of congressional hearings will be noted.

by Phillip R. Wheeler / Bureau of Naval Weapons

GENERAL Dave Baker in a lecture to the War College asked why the Air Force adopted the weapon-system concept. He then enumerated as reasons:

1. Equipment is increasingly complex.
2. It is more complex to operate.
3. Thus, there is a need for better-trained people.
4. Manpower ceilings are aggravated by salary limits and by resulting employee losses.

Limited people available to carry out assigned responsibilities was perhaps the most pressing problem. It is probably the single most basic reason for the system approach.

Using a single contract rather than several contracts reduces the Government workload because:

More technical responsibility is delegated.

Only one instead of several contractors must be located who are suitable to do the work.

This means fewer forms to fill out, fewer specifications, negotiations, letters, visitors, and fewer conferences for the administering government office.

Some factors in Government manpower problems were considered in Part I of this series. The need for keeping Government employees at a minimum is often expressed in Congress, and reported in the press. It is a legitimate and worthy goal. It can be applied equally to industry personnel paid from tax funds, especially in connection with cost plus-fixed-fee types of contracts. But if the management is in the hands of industry, the number of persons hired seldom or never seems to be questioned by Congress or the press.

To the small groups of Government personnel struggling with increasing forms and reports, the system approach is a happy solution. It permits wrapping all the development problems of a complex program into one big package, connecting it to a pipe line of dollars, forgetting the technical aspects and many other problems, and placing the whole package in the hands of a contractor.

Single Responsibility

In doing this, we arrive at a "Single Responsibility" the second item claimed as an advantage for the system approach to contracting.

Quoting from a well known management text, "The idea that authority and responsibility should be coextensive is one of the most widely recognized principles of organization. It recognizes on the one hand, the unfairness of holding a man accountable for results that he is not permitted to guide according to his own best judgment, and on the other, that if a man is given considerable latitude of action, he should be held accountable for the wise use of this permission."

Some examples highlight this. As noted in Part I, it has been customary for defense agencies to separately develop and procure such items as engines, radars, and instruments. These would then be supplied as semi-standard equipment. In one instance, an engine was specified by a Defense agency for a new airplane. Studies by the airplane developer showed the engine to be inadequate. But, both the Defense agency and the engine developer insisted the engine would work.

The engine turned out to be inadequate,

and the airplane was not safe to fly. At considerable cost in time and money, the airplane was modified for a larger engine. In another case a parallel situation occurred with a radar installation.

Examples like this provide a strong case for industry arguments for greater responsibility and authority.

On the other hand, opposing examples can be as easily cited. During World War II, prolonged difficulty was had with a four foot diameter roller bearing for a PT-boat gun turret. The developing contractor worked for about two years with no results. Finally, a defense agency group stepped in and designed a replacement which not only eliminated the problem, but simplified design, eliminated critical material, and saved about \$3-million on units subsequently procured.

In a more recent case, a research and development contractor spent four years of intensive effort and over a million dollars on a missile subsystem which never resulted in a single successful flight test. A government engineer, early unhappy with the system's complexity and cost, managed to get an alternate system investigated and developed. The alternate system not only worked, but became available at a crucial time in the missile program. It was far simpler, reduced weight, complexity and cost, and saved millions of dollars.

Obviously, results depend on the quality of knowledge and technical judgment exercised, and not necessarily simply on having responsibility or prerogatives. It is also apparent that high quality judgment may be lacking or found either in industry or government.

ARMED FORCES MANAGEMENT

Pro and Con on the Systems Approach

On the Plus Side:

1. Fewer government employees needed.
2. Single control responsibility.
3. The contractor can employ enough people to do the job.
4. Red tape cut.
5. Decisions can be made more quickly.

On the Minus Side:

1. Higher costs.
2. Government control is lost over large parts of the development effort.
3. Small business tends to be frozen out as primes tend to move the entire development to their own plants.
4. Standardization suffers.
5. Less incentive to hold down costs.

Both contractors in these two examples were among the largest and best known in the defense field, and one had connections with a prestige university.

Unlike fixed ceilings on Government personnel, industry can hire as needed, particularly on cost-plus contracts. In fact accusations have been made that industry has stock piled personnel in anticipation of contracts.

Industry procedures for subcontracting and purchase are also more free from restrictions and regulations. Last month, some of the Government problems were noted.

Industry dealing with Government has an equal share of problems. Rep. Tom Steed of the House Small Business Committee notes that "there is serious question whether they (small businesses) will be killed off not by any production problem, but by the military's procurement and paper work procedures."

The Minus Side

An officer making a presentation on the subject of costs stated: "What happens when we turn over to certain primes the responsibility for working directly with major segments of industry? First and foremost our costs will go up substantially.

"Vendors must establish bigger sales forces to sell to several primes rather than the Air Force. Several short-run orders will result in erratic production and higher costs."

The officer was comparing development of accessory items by the Government, the purchase of these in a sufficient quantity and supplying them to airplane producers as needed.

The following examples of actual increases in costs were cited by him:

Similar Item Costs Procured By—

Contractor	Government
\$ 68.00	\$ 40.00
55.03	34.57
72.00	43.25
500.00	435.00

These increases vary from 15 to 70 percent.

To further quote General Baker, "A good rule of thumb for cost increases through contract procurement is:

Engineering monitorship...one percent
Administrative expense...one percent
Profit.....seven or eight percent—

making an overall of about ten percent.

"These increases have a direct bearing on our ability to obtain the maximum return in air power per dollar of the taxpayers' money."

This loss of direct government control occurs because few primes are

large enough to handle all aspects of system-type contracts. When a prime divides up such a contract and selects his subs, the Government can deal with subcontractors only through the prime. This can work satisfactorily. But if things are not going well, the Government is at a disadvantage in dealing with the subcontractors.

For instance, the Government can release proposed work to the prime, but cannot release it to the subcontractors. Sometimes an appreciable delay occurs while the prime decides what part of the work he wants the subcontractors to have. This happens even where work has been specifically agreed upon and ear-marked for certain subcontractors.

Even the Air Force's Gen. Baker has noted:

"Air Force loses direct control over large segments. . . . A few primes will tend to move entire development into their own plants. This has already occurred in missile contracts.

"There is pressure for primes to keep up their own employment by reducing that of subcontractors.

"This means that the largest single share of the tax-payers' dollars (seven or eight billion dollars) will be concentrated in a few cities.

"Small business would be virtually eliminated from the aircraft program."

Wasteful Methods

The need for maintaining Government control is brought out forcefully in a statement made by C. L. Zakhartchenko, in an interview with Scripps-Howard writer Jim Lucas. In an article entitled, "We Must Produce, Not Spend and Talk," he stated: "Too much money is costing us the lead in the guided missile race. . . . The military believes that by shoveling out

money it can get results . . . Too much money spent without control is the reason we are not ahead. Responsibility can't be pinned down."

Cited by the Department of the Navy for extraordinary contribution to the Navy's guided missile program, Mr. Zakhartchenko termed the guided missile field one of "complete confusion" . . . described it as a "mad world" of conflict and duplication in which scientists become bureaucratic empire builders, money is lavished on needless facilities, universities scramble for prestige, industry throws money down the drain on cost-plus-fixed-fee contracts ("The surest road to socialism"), and professional military men are put in charge of work they don't understand while the taxpayers foot the bill.

"Our Air Force," he said, "tries to build missiles by awarding contracts and then washing its hands of further responsibility." Thus it can always tell Congress, "We tried . . . look at the money we spent." Again, "The Navy pays millions to scientists who are more interested in ideas than in the product."

As a result, he said, "Scientists become empire builders. . . . The more people under them the higher their salaries. They spend research money on elaborate facilities ignorant of the need to put missiles into the hands of the men who must fight."

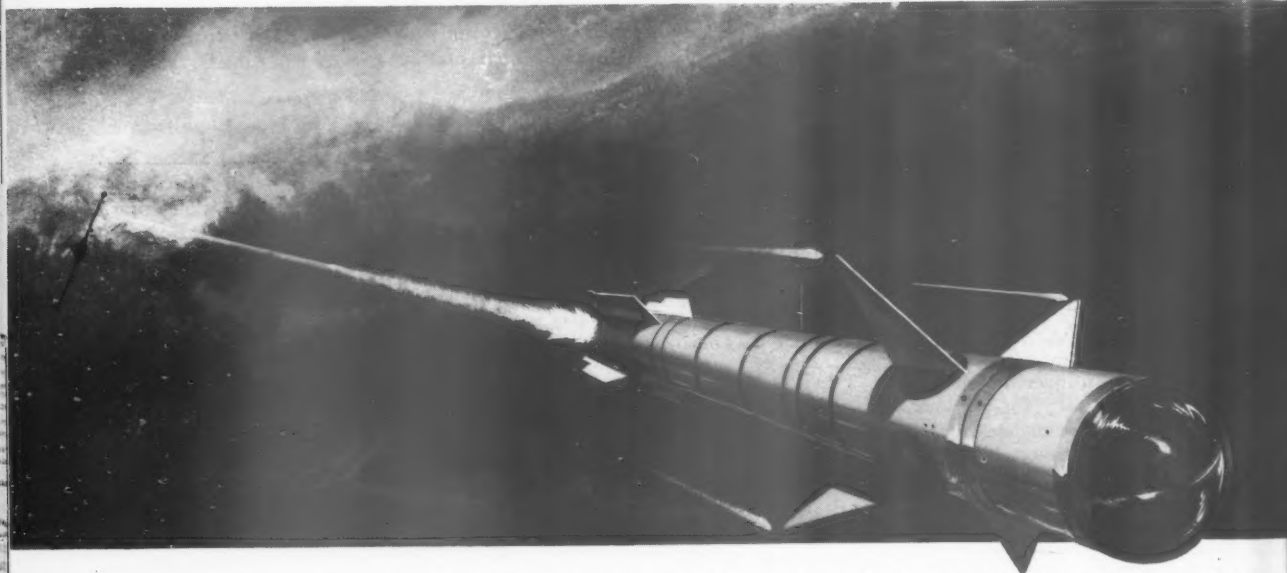
In spite of these strong indictments, Air Force Regulation 70-9 of November 1953 contains certain safeguards. It specified that "Sufficient control will be established and maintained by the Air Force to insure that

1. A vigorous and healthy equipment industry will be maintained.
2. A proper industrial base is maintained in the equipment industry to provide for rapid expansion in the event of mobilization."

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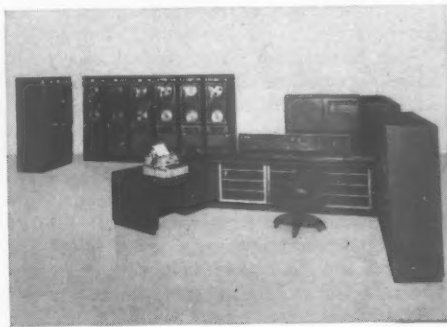
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Yet parts makers and suppliers were uneasy and felt they were being hurt. In the magazine, *Aviation Week* of January 17, 1955, a reported interview with Lieutenant General B. L. Boatner was headed, "AF Tells Primes to Stay in Own Back Yard." Subheads stated "Material Chief Says Parts Makers Will Be Protected—USAF Warns of Police Power to Enforce Policy."

This was in response to complaints from industry and charges by the House Small Business Committee. The Committee stated that it favored a comprehensive investigation of the weapons system concept. Quoting the above article, the Committee said it feared, "The major primes have used their new position to obtain engineering information in the guise of considering a subcontract only to use this data in the manufacturing of the item themselves."

The article then said, "Both small business firms and major component and subsystem manufacturers feel the weapon system concept will result in the cartelizing of major aircraft concerns."

Standardization Suffers

The Department of Defense has to buy millions of items of supply and spare parts. Criticism from Congress several years ago launched a high-level effort to cut the number and variety of items to be procured, stocked, and issued. Regulations and directives have been issued, but educating industry and policing of these directives takes time and people. On many items prerogatives are open.

General Baker stated: "The second major area that will affect Air Force logistics is standardization. Effort to achieve standardization will suffer from the use of system contracting."

He noted considerable evidence that when Air Force has turned over instrument and accessory procurement to a contractor, standardization has already suffered seriously.

He noted that an "accessory manufacturer stated he had orders from three different primes to develop three different thrust meters when one would do the job."

Any manufacturer likes to have items "special" in some manner and therefore can be obtained only from him when replacements are needed.

Standardization is a large, complex problem. It has had and is receiving much effort and study. It is a worth-

while and desirable goal. But there are more ways than one to skin a cat, and industry education and compliance with standardization are not likely to reach near-optimum without considerable monitoring by the Government.

A contractor with a cost-plus-fixed-fee contract and overall responsibility for a system generally collects on his costs, whatever they may be. He can spend freely within wide limits. In so doing, he may increase personnel, develop items which later may find commercial markets and otherwise exploit the relatively free funds allowed.

Overruns do not reduce his fee. In fact he can, on the basis of change in scope often renegotiate and collect more. Flexibility in setting costs and in accounting procedures permits wide variations in detail approach to records, some of which can be turned to the benefit of the contractor, even though this whole area of operation is covered by voluminous directives, laws and statutes.

Hearings on the system approach to contracting were conducted this year by the Hebert Committee, a Subcommittee for Special Investigations of the House Armed Services Committee. High officials from industry and Government testified.

The large aircraft companies all promote the system approach. Some of the earlier enthusiasm of Department of Defense has cooled and tempered. Personnel from General Accounting Office presented examples of high costs, errors in bookkeeping and accounting, and other criticism of specific contracts investigated. Congressman Hebert questioned whether there is adequate incentive under the system approach to obtain needed cost reductions.

Atwood of North American Aviation insisted that weapon system development can be accomplished for minimum cost because of:

1. Fast decision making.
2. Clearly assigned responsibility.

J. V. Naish, president of Convair, said he felt the system approach for management is an absolute necessity. He said there is "need for people with a sense of urgency, specialized knowledge, full responsibility and authority to act swiftly using short channels of communication."

Clyde Skeen, Assistant General Manager of the Systems Office at Boeing, stated, "There is a primary saving in having a definite coordinating effort and no loss of time in making decisions, inasmuch as time is money."

Robert E. Gross, Chairman of the Board of Lockheed, pointed out that often the Government is seeking brainpower and intangible ideas. He noted that systems development has become so big that it takes "teams of companies" to handle it.

Allen of Boeing felt that twelve percent was a fair profit before taxes and six percent after taxes.

Chairman Hebert stated that "A company is made a manager and paid a fee for something that they formerly performed for the Services (DOD) without a fee." It was brought out that there seems to be growing feeling that with weapons system contracts there are many loopholes for excess profits and little, if any, incentive to cut costs.

GAO and the Air Force

The General Accounting Office took the Air Force to task for high costs. GAO officials felt fair and reasonable prices were often not negotiated because:

1. Facts known by the contractor are not made known to the Government negotiator.
2. An inadequate audit is made of subcontractor cost factors.
3. Fixed price contracts are sometimes used when insufficient knowledge of cost is available.
4. Negotiations do not always consider latest available information.
5. Option to renegotiate is not taken advantage of.
6. Bookkeeping errors are not discovered prior to nor during negotiation.

GAO people also saw a great possibility for collusion between a prime and his subs. In the hearings, the question of the review or audit of subcontractor books arose a number of times. Some primes insisted they had no authority to audit the books of their subcontractors and that they depended upon the Government auditors to do this. But Convair officials stated that they do audit the books of principle subs and were praised by the committee for this.

What does all of this add up to? Should we go back to the old system of separate developments of components and subsystems, lift the ceiling on Government employees, do more work in Government laboratories or try to devise contracting approaches that will motivate industry to be more concerned about reducing costs, helping small businesses, meeting standardization goals, and keeping in mind the general welfare of the country and the taxpayers?

(Next month some conclusions and recommendations relative to this will be made.)

How Do You Standardize Ground Support Equipment?

Air Materiel Command is mounting a many-pronged attack against one of its toughest—and most important—areas of operation. To make sure that the entire Air Force is getting the most for its money out of GSE, this is what is being done.

A MANY-PRONGED attack on the problem of standardizing ground support equipment is being waged by the AMC Aeronautical Systems Center.

Standardization of ground support equipment, or GSE as it's commonly known, has been a thorn in the Air Force's side since the advent of supersonic airborne weapon systems. However, this problem has been sharply accentuated by the growing complexity of airborne weapon systems and the resultant production of items peculiar to only one weapon system.

"We must take advantage of every possibility for standardization if we hope to live within our procurement budget," says Maj. Gen. Beverly H. Warren, Commander of the Aeronautical Systems Center.

"We can save development and production dollars by standardizing in the early stages of a weapon's life cycle and reduce training periods and training requirements for maintenance people. Eventually we hope to develop multi-purpose support items which could service both missiles and aircraft."

One giant step toward standardization has been made by publishing a Technical Information File. This was the result of an industry-Air Force task group whose chairman was Lt. Col. O. B. O'Neill. He was then Chief of the Support Equipment Division of the Aeronautical Systems Center which initiated the program for development of the Technical Information File (TIF).

This file, now containing about 500 pages, catalogues missile and aircraft support equipment in inventory or under development by the Air Force.

Design engineers will use this catalogue for descriptions of equipment, complete with specifications that detail the characteristics and physical make-

up of equipment used in aircraft and missile support.

With the ground support portion of a modern weapon system taking an increasing percentage of overall program dollars, the Technical Information File, as a management tool for industry and the Air Force, will provide proportionate savings through broader use of existing information on ground support equipment.

The chief of the Support Equipment Division, elaborating on the Technical Information File, explained that it was a joint effort by industry and Air Force. "Much credit belongs to representatives of Aerospace Industries Association, Electronic Industries Association, The Society of Automotive Engineers, and the National Security Industrial Association. Their help was invaluable."

Using the Catalog

The loose-leaf catalogue is being distributed to all prime weapon system and support contractors and those offices engaged in military procurement. The first press run of 2600 copies was distributed on July 1, 1959. Ultimately it is expected that the file will contain information on about 5000 items used in the ground support area.

Submitting data for the TIF by prime contractors will be a requirement written into all new contracts. Where feasible it will be an amendment to existing contracts which require the design, development, production and delivery of GSE to the Air Force. The contractors will be directed to comply immediately with the specification.

Instructions issued to the buying offices of Aeronautical Systems Center, specify the criteria governing submission of data by the prime contractors as follows:

- a. Complete data will be submitted progressively on all end items of GSE to be delivered by the prime contractors that have a unit value in excess of \$2,000 or with a potential or actual annual procurement total dollar value in excess of \$100,000, regardless of unit cost.
- b. Complete data will be submitted on any other GSE regardless of dollar value if so designated by the Weapon System Project Office, or one of the buying divisions.
- c. When amending existing contracts, a determination will be made as to whether data sheets for the Information File shall be furnished by the contractor for GSE end items which were delivered to the Air Force prior to date of contract amendment.
- d. All MIL-D-19731A data will be submitted by the contractor directly to the Logistics Support Manager with information copy of the transmittal letter to the appropriate Weapon System Project Office. The Logistics Support Manager forwards the data to the AMC Directorate of Supply who is charged with the compilation of the Technical Information File.

Answering the question of when the data is submitted, the instructions state that, "The data sheet will be submitted at the earliest time practical when the equipment development reaches a point of engineering definition."

Revised or updated data sheets will be submitted as end item design and development progresses or where there is a significant engineering change to existing equipment.

The Systems Center's managers are also emphasizing standardization to reduce the number of nonstandard items

entering Air Force inventory. To this end a new regulation dated 21 July 1959 has been issued. It is ASC Regulation 375-4 entitled: "Weapon Systems—Ground Support Equipment."

It contains the basic concepts set in an AMC letter on the subject of Acquisition of GSE for Weapon/Support Systems. Basically, the letter, and the resultant regulation, underscores that the Aeronautical Systems Center, Ballistic Missiles Center and the Rome Air Materiel Area will procure those peculiar items needed for support of their respective weapon or support systems, assuring surveillance for maximum standardization.

The Aeronautical Systems Center is continually coordinating its standardization efforts between the Weapon System Project Offices, the equipment buying division and the appropriate Log Support Manager or the Commodity Class Manager.

However, General Warren in his letter implementing the AMC policy letter, stated that "standardization responsibility is vested in the Weapon System Project Offices." He also noted that "care must be exercised to insure that where a Log Support Manager has several systems assigned that the Weapon System Project Offices involved must accomplish this standardization jointly. This will insure that all concerned are working toward the same objective."

One important point contained in the ASC Regulation 375-4 is that "Buying divisions, including the Weapon Systems Project Offices, will coordinate with the Ground Support Equipment Division on all contracts wherein GSE data or end items are required and on all requirements and contemplated requirements for automatic checkout equipment prior to approving the procurement order."

This will insure that what is considered peculiar equipment by the buying divisions is not carried as standard

by ground support people. It will also present to the GSE people the problem of how to convert to a standard item that equipment which begins its life in the peculiar category.

Another area of standardization which the Aeronautical Systems Center, along with its counterpart in the Air Research and Development Command, is insisting upon is that, wherever possible, equipment used in the testing phases of aircraft and missiles be the same as that which later will be used in operational squadrons. Heretofore, many items of ground support were developed just for the testing phases of a weapon system without proper regard to later operational requirements. This resulted in additional procurement, and revised maintenance and training requirements.

Standardizing by System

Prior to cancellation of the F-108 program, extensive efforts towards standardization were being accomplished on that vehicle and the B-70 system. Basically, the program involved standardizing the GSE between these two programs and, in addition, standardizing between such systems as would be forthcoming during the same contemplated time period.

Results of these efforts were limited due to the early stage of development of the F-108/B-70 programs but over 81 items of Common GSE were directly applicable between the two systems.

An example of future standardization efforts is in the area of automatic test equipment.

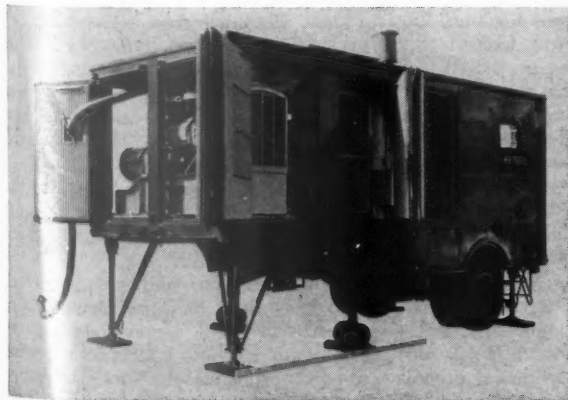
The Air Force has directed the development of a standard piece of system test equipment called the "Programmer-Comparator." This piece of test equipment will consist of a basic standardized programmer, capable of programming the various sequential tests required to checkout a system or

subsystem. Adapters will marry the standard programmer to the subsystems of individual systems. Tape techniques will be used to tell the programmer what to look for when doing a periodic inspection or conducting a trouble shooting test. This same programmer will be used in maintenance shops for more detailed test and repair.

Within the AMC Aeronautical System Center itself, the WSPO Integration Officers are responsible for monitoring standardization actions. Production engineers within the WSPO's monitor for standardized production processes including tools, materials and related items. The Aircraft Equipment Specialist monitors for detailed analysis of each piece of GSE to be sure it has been processed and approved for maintainability whereas the Supply Specialist monitors for compliance with all supply procedures and requirements. This program insures that all phases of procurement, production, supply and maintenance are accounted for to accomplish the maximum standardization. The WSPO coordinates its actions with the GSE Division in compliance with ASC Regulation 375-4.

This many-pronged approach to standardization of GSE encompasses the use of the Technical Information File, use of standardized gear during the testing phases, standardization between compatible weapon systems and coordinated actions within the Aeronautical Systems Center.

Net results of these management efforts is that standardization of a complete weapon system is controlled at one focal point within the Air Force. In this way the program of the Air Force and the Department of Defense is being accomplished and the benefits of standardization are being realized with the weapon system industrial manager balancing the program to achieve the optimum weapon system at the earliest point in time.



The ultra-complex ground support vans and equipment used in today's weapon systems are a far cry from the days when bombs were loaded from wheelbarrows. These advances have forced a thorough evaluation of ground support management.

The Fourteen Erroneous Postulates*

Repeatedly in the last handful of years, management experts have urged as much basic research into the principles of organization as is now going on in building hardware. Unfortunately, says Kuhre, even today's effort is looking in the wrong place for the answers

by Col. Leland B. Kuhre, USA (ret.)

Founder & Director
The Academy of Organizational Science

THE difference between rational science (creating something that did not previously exist) and empirical science (explaining a natural creation) is a critical distinction when we view collective human effort.

Empirical science (physics, chemistry, biology, sociology, psychology) starts with a given creation. It observes that creation, assuming that there is a natural law governing it, and assuming that sense-observed data are true. It hopes enough accumulated data will suggest the law which explains the performance of the natural creation. Empirical science observes collective human effort from the same viewpoint. The collective is a given creation, often called a social organism.

On the other hand, rational science, (mathematics, rational mechanics) creates. It starts from a set of assumptions called postulates, axioms, undefined terms, and definitions. From these assumptions, propositions are derived by strict logical deduction. Derived propositions are true if postulates and axioms are true. The most familiar example: Euclidian geometry.

In 1935, after 14 years of being in, trying to organize, and directing collective human effort, I became convinced that rational science could be used to create or re-create organized human effort as a purposive, systematic, harmonious, arrangement having stability, continuity, efficiency, and effectiveness.

I observed that people often quoted "principles of organization" to support personal theories and actions. But I also found other so-called principles to support opposite courses of action in

organizing and directing collective effort. It became obvious that the so-called principles were no more than maxims and proverbs of a lore.

Maxims and proverbs characteristically emphasize one side of a dualism, although each has its opposite. Forming and operating an organization in a given situation amounts, obviously, to picking an improvised and indefinite course of action somewhere between the opposites. But a rational science does not contain "either-or" dilemmas to force trial-and-error solutions.

Is it Valid?

Once I decided to question the validity of observed structure and performance of collective human effort (it had only a 50-50 chance of being right) I encountered violent and dogmatic defense of prevailing practices. To question a person's belief on organization and management had about the same effect as questioning his religious beliefs. This reaction was unexplained for many years—why an organizational belief should be as fixed as religious belief. It was not until Organizational Science was formed that the explanation appeared.

While organizers have spent huge sums of money on empirical research in collective human effort, the selfsame organizers still use personal rationalizations to guide their creative practice. These rationalizations stem from what corresponds to postulates and axioms of rational science. Thus the organizer who buys empirical research while trying to practice rational science, is, technically, and probably innocently, guilty of intellectual dishonesty. He is not really looking for an empirical organizational science; the experienced organizer knows better. He hopes the research may suggest a new idea to be

added to his own set of postulates and axioms, thus improving his personal rational science.

Anyone doubting predominance of the personal approach to organization and management, can simply look at the programs of the American Management Association, the American Society for Public Administration, the Society for Advancement of Management, schools of business administration, or the instruction in military schools. The most sought-for instruction is by reputable practitioners in these fields. The instruction hinges on "how I did it" in a certain case; and it is authoritative in proportion to the stature of the speaker in his field—business, government, or military.

The speaker has in mind a philosophy, a set of underlying concepts, his postulates and axioms. He derives his practice from these postulates and axioms; and thus creates or re-creates organizations.

The speaker believes his personal philosophy is the basis for his success. But he cannot prove his postulates and axioms. They are true because he believes them; and, to him, they are as self-evident as the axioms in geometry. Questioning his postulates is simply not done. This would lead only to a "taint" argument, and the exchange would become emotional.

How do commanders, chiefs, or directors derive their postulates and axioms? How many postulates are true? How many are false?

Age, repetition, and prestige-utterance have fixed half true maxims and proverbs in people's minds. In various combinations, these beliefs take on the weight of postulates. They build the personal rational science of organizers and managers in all fields of effort.

After 1945, when I found the key to

* On a one-a-month basis, author Kuhre will dissect each of these false laws outlined here, beginning in the next issue.

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rational organization science (in universals of collective human effort), I began to see that fourteen commonly held postulates were erroneous. They cause friction, discord, and failures in collective human effort today.

One

The first erroneous postulate: men, ordinarily and on their own initiative, will contribute only about one-third of capacity, and that leadership (the whip, the carrot on a stick, personal magnetism, the palliative and the psychomanipulator) is required to get the other two-thirds.

Two

The second erroneous postulate: there are two classes of people in an organization—one class to do the thinking and give orders, and another class capable only of taking orders, carrying them out.

Three

The third erroneous postulate is that efficiency and the recognition of universal human rights are incompatible.

Four

The fourth erroneous postulate is that an organization is fundamentally a collection of the "4-M's" (Men, Money, Materials, Machines).

Five

The fifth erroneous postulate: collective human effort is unified as an organization by leadership alone.

Six

The sixth erroneous postulate: the governing structure of an organization is a net of personal relations.

Seven

The seventh erroneous postulate is that "leadership (management) is getting things done through people" as distinguished from letting people get things done.

Eight

The eighth erroneous postulate is that an organization is the "lengthened shadow of one man."

Nine

The ninth erroneous postulate is that an organization is formed by delegation and operated by supervision.

Ten

The tenth erroneous postulate is that "line" and "staff" are separate functions.

Eleven

The eleventh erroneous postulate is

that an organization is composed of two organizations—the "formal" and the "informal."

Twelve

The twelfth erroneous postulate: the organization of human effort is analogous to the mysterious or organism as distinguished from being a rational system.

Thirteen

The thirteenth erroneous postulate is that the organization of human effort is formed by evolution.

Fourteen

The fourteenth erroneous postulate is that an organization can be shown by a pyramid-of-blocks on a chart as distinguished from the graphics which show the entire organization as a system of relations between all individual expected contributions to the purpose of the whole.

The fourteen erroneous postulates are variously promulgated as true in the literature of the day on organization and management. The pressure for more, bigger, and better organizations, and an outpouring of tons-per-month of literature in this connection, have men grasping at straws, searching for a firm footing for their personal rational science.

Unfortunately, today, there is a general blind faith in "science" as though it were an unknown god holding the keys to man's aspirations for progress to a better life. It is understandable that research is generally thought to be the only way to find the keys.

But let us not forget that science is a combination of two mental tools to multiply man's intelligence. In rough metaphor, one tool is the shovel, the other is the hammer. The explorer uses the shovel to uncover things that exist. The builder uses the hammer to make things that did not exist before.

Empirical science is the shovel; rational science is the hammer. With empirical science man digs up and accumulates a pile of knowledge about the things he observes. With rational science man screens and selects the valid things from the pile of knowledge and uses them to create something new. Both mental tools have their function in man's progressive creative work. Each has capabilities and limitations.

No matter how long, how deep, or how extensive is the use of empirical science research in collective human effort, it can never produce a science of organization for forming and operating the organization of human effort for a given purpose. Only a rational science can do that.

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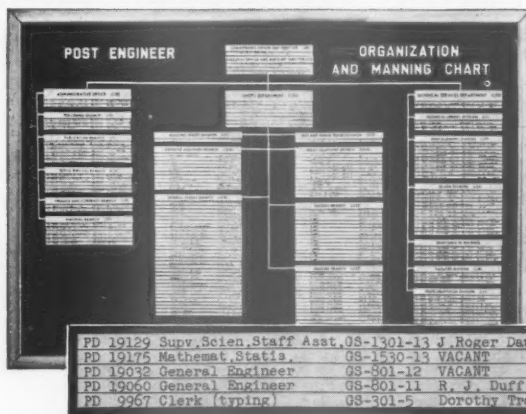
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This Month:

Brigadier General John W. Cave

Army Assistant Chief of Ordnance for Program Coordination



TAPED to the office door into 2E414 the Pentagon, in unavoidable view of a large mahogany conference table, is a one word admonition—"Simplify."

Putting up that sign was one of the first things 52-year old Brig. General John William Cave did when he moved into the Pentagon, in January 1957, as Army Assistant Chief of Ordnance for Program Coordination. Says Cave, "no other single action in the Pentagon would give more improvement to our operations than following that one-word rule."

"Much of the staff's troubles, its inefficiencies, result largely because people don't know what they are talking about"—i.e. published directives and instructions, instead of explaining, invariably prompt a rash of meetings and telephone calls whose sole purpose is to figure out what the instructions are saying.

In just the writing end of the business, Cave was instrumental in having Rudolph Flesch the simplified writing expert, into the Pentagon twice in an attempt to improve ordnance staff officers' writing. But even Flesch admits this kind of thing wears off, needs constant emphasis.

In Cave's case it is particularly critical. Key segment of his program coordination job is to put out basic work and resources guidance for ordnance program managers. "Gobbledygook here," says Cave, "makes second generation documents among the programs themselves even worse."

A keen student of what has been termed today's "growing science of management," Cave first became aware of its significance when he transferred into the Ordnance Corps from the Field Artillery in 1939, was swept up in a wartime rush of promotion on promotion, greater and greater responsibility being stacked on his shoulders on shorter and shorter notice.

The thing that struck him then: "There was and still is, a great demand for a high order of technical knowledge which we acquired on the job. But as an officer starts moving up from actual doing to supervising, he must learn or develop administrative skills to add to the technical fundamentals.

"As an officer progresses up the ladder,

he finds that his attention is taken more and more by administrative work and less and less by technical details. It doesn't take long before his managerial talent becomes the key to successful operation."

Chief of the Arms and Ammunition Proof Division at Aberdeen Proving Ground, Maryland during World War II, he spent the immediate post war years conducting extensive technical investigations into German and Japanese ordnance developments, returned to the U.S. in 1947 to enter the Industrial College of the Armed Forces, was assigned to the newly organized Defense Department's Munitions Board following graduation. He returned to the Industrial College in 1950 as a member of the faculty, had a first hand opportunity to discover just how much the services needed to do in the management science business.

Says Cave, "The Industrial College faculty had noticed this technical-to-administrative pattern. They had also discovered that, as with industry, the men destined for higher jobs were learning things about managing empirically. The result was gaps and sags in general management skill levels even though management was going to be the primary job of these people."

Cave, with two other officers, was detailed to set up an "executive skills" course at the College, had to do quite a bit of "intellectually stimulating" research to develop the course. One of his discoveries: "Most of us, military and industry, are in the management end of this thing somewhere and in this area problems of industry and the military are precisely the same.

"And there is a good deal we can learn from each other. Many of the new ideas circulating industry we should adopt. On the other hand some of the stuff they describe as so wonderful today is the sort of thing that the Army has been doing for decades."

John Cave has not always had such a clear cut idea of what his job amounts to or even of what type of work he should be doing. Born in Los Angeles, California, he spent his basic schooling years in Buffalo, N.Y. and Great Falls, Montana, graduated from grade school at twelve, finished high school when he was sixteen.

One other teen-age blue ribbon: always a lover of the outdoors, he could hardly wait to get into the Boy Scouts, became one of Montana's first Eagle Scouts.

This "early out" in basic education bothered him considerably. One to two years younger than any of his classmates, he decided to stay out of school until age could catch up with achievement, spent the next two years moving around the country in a variety of jobs. (Among them: copper miner, stock clerk, ranch hand, oil field roustabout.)

A short stay on the Washington coast exposed him to ocean water, got him thinking about joining the Navy. Cave trekked back into the Rocky Mountains, entered Inter-Mountain Union College to prep for the Naval Academy. He passed the Annapolis exams in Montana, came all the way east only to be turned down for a physical disability (inadequate color perception).

Cave headed back to Buffalo, N.Y., was asked twice by Montana Congressmen if he was interested in West Point before he finally said, "Yes."

He graduated in 1931 with a Bachelor of Science degree, went into the Field Artillery "because of the promise of a variety in the work, especially the appeal of horse-drawn artillery."

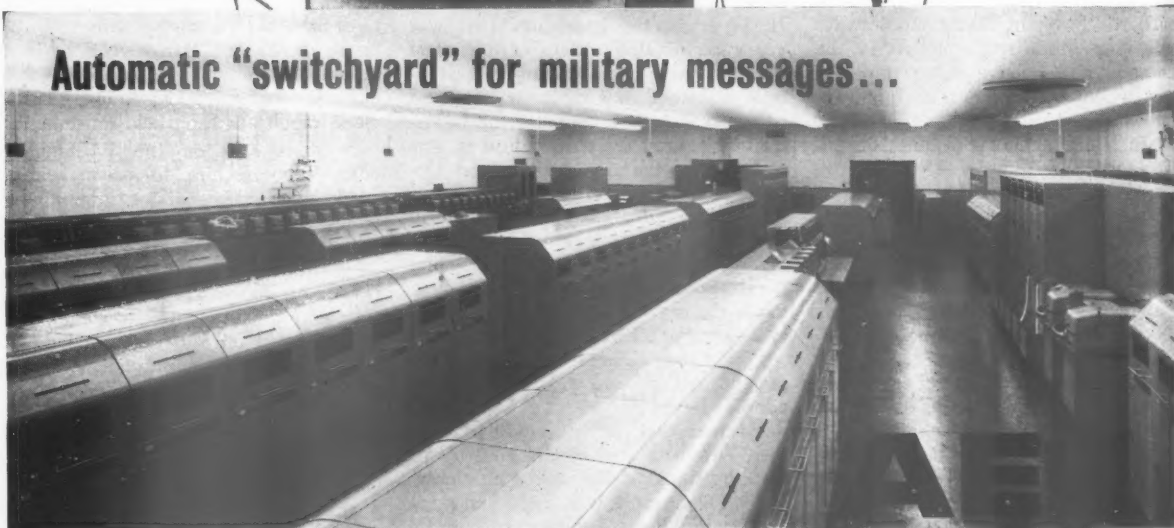
Cave moved into Ordnance in 1939 in answer to an Army call to build up the tech services to support the blossoming Air Corps. He has become today one of those men the tech services want "to know everything about something, something about everything" in the technical business.

At the same time he has become a bug on the management business, is convinced that graduate schools are the best way to spread knowledge about the subject farthest and fastest. He attended Columbia University's first Executive Program in Business Administration in 1952.

"The great value of these schools," says Cave, "is that they provide a forum where individuals can exchange experiences against a background of what is building up as the science of management—and I don't know of a single top level or near-top level man who shouldn't be expert in it."



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Research Rundown

THOROUGH AND EXTENSIVE RESEARCH will be the order of the day in Navy's new Bureau of Weapons. Aim will be to have better decisions on production go-aheads. System will be to spend more on relatively cheap research work, avoid ultra-expensive pilot production work, and stay away from production abortions such as the P6M, a good airplane which Navy ultimately couldn't afford.

AIR RESEARCH AND DEVELOPMENT COMMAND IS WORKING hard in communications and control areas, as witnessed by formation of Command and Control Development Division. Heaviest emphasis is presently on developing a system that will put real teeth in the Ballistic Missile Defense area. Also under study: possible supersonic transport. Aircraft manufacturers are working closely on the economic end of the problem.

MORE IN-HOUSE NAVY RESEARCH WILL BE HAD IN THE FUTURE, as BuWeps tries to work more with engineering type specifications, less with the performance type specs that leave more of the responsibility with industry. According to Bureau Chief Stroop, the drive is for greater reliability, cheaper spares bills in the long run.

AN ECONOMY MOVE EFFECTING THE B-52H has been announced by Air Force, will mean cancellation of an advance electronic countermeasures device scheduled for the plane. Under development by Sperry, the countermeasures system will be replaced by a simpler system using existing components. Money spent on the new system to date: \$25-million.

THE CASE OF THE DISAPPEARING WORD is currently puzzling Pentagon sleuths, who have found the word "astronautics" scarcer and scarcer around. In Navy's BuWeps, the Assistant Chief for the Pacific Missile Range and Astronautics is now simply Assistant Chief for PMR; in Air Force, Gen. H. A. Boushey will not be Director of Astronautics as previously reported, but Director of Advanced Systems. Most likely initiator of the purge: National Aeronautics and Space Administration.

REWORKED VERSION OF THE ARMY'S HONEST JOHN is in the mill at Douglas Aircraft. Aim of the work is for more range, more accuracy and greater mobility than the earlier model. Referred to as the Super Honest John, the improved model will be somewhat shorter in length and easier to transport than its predecessor.

CONVERSION OF THE FIRST THREE OPERATIONAL ATLAS launch pads to research and development work has been proposed by Air Force. Located at Vandenberg AFB, Calif., the pads are considered by many to be pawns in an AF power play directed at the Navy's neighboring Point Arguello missile range. If approved, the move would concentrate major West Coast space work in the Air Force space complex.

AIR FORCE'S MINUTEMAN IS MOVING ALONG WELL, contrary to some reports that problems had developed with the second generation ICBM—particularly in acoustic and heating areas. Predicted range values have been met with "no excessive deleterious effects." Most likely contender for the bird's first stage engine case competition seems to be General Motor's Allison Division.

Research Rundown

ASW Committee Formed by Navy

A top level committee "to provide appraisal and direction of the Navy's total effort in anti-submarine warfare" has been set up by the Navy, under the chairmanship of the Secretary of the Navy.

The committee will (1) review and evaluate a list of new policies, giving full consideration to research development tests and operational aspects, and to programs and projects related; and (2) review administrative and logistic and fiscal problems affecting ASW programs.

In the past, Navy has been working with a radically splintered ASW effort. Many persons both in industry and government, have felt these splintered activities are one reason the current ASW programs are not up to par.

Besides the Secretary of Navy as chairman, the new committee will include: Chief of Naval Operations, Vice Chairman; Under Secretary of the Navy, Assistant Secretary of the Navy for R&D, four DCNO's and three Bureau Chiefs. Also, associate members will be invited to participate when matters of functional concern to them are under consideration.

Warhead Identification To Be Probed by ARPA

Identification of ballistic missile warheads as they come in will be the aim

of the new series of tests to be run by Advanced Research Projects Agency.

Called Project Defender, the total cost of the program for one year will be between 75 and 100 million dollars, depending on support facilities used.

The experiments will include investigations of ballistic missile characteristics through the trajectory to the limit of radar range during entry. The radars used will operate on several frequencies to exploit varying flight phenomena.

Equipment for the program will include two high-powered radars, to be built by Radio Corporation of America and Raytheon Manufacturing Company. A rapid data processing device may be added to the island complex at a later date.

Army Describes Needs For Future Aviation

The airplanes Army will need by 1965 were the subject of a recent Industry/Military conference at Fort Monroe, Va. Over 400 representatives from 137 aviation and electronic firms heard these Army needs detailed:

Significantly improved light observation airplanes for use close to battle lines; surveillance airplanes for probing enemy territory; and transport planes for moving troops and material in and out of battle areas, despite terrain.

In the past Army has tailored its missions to match the capabilities of

aircraft on hand. Under the new program, Army wants to reverse that procedure and get aircraft tailored to the jobs they will have to do.

Colonel Robert R. Williams, Chief of the Air Mobility Division of Army's Office of the Chief of Research and Development, said Army wants truly important technical breakthroughs in the aviation area. "We are not interested in simply minor improvements over the aircraft we now have," he said, "we want major advancements."

Outcome of the conference will be design studies from the manufacturers to be submitted to Army by February 1. Colonel Williams said design competition on actual airplanes resulting from the study could be held next year.

Dyna-Soar Problems Outlined by Charyk

Several complex problems must be solved before the Dyna-Soar bomber becomes a reality, according to Assistant Air Secretary Joseph V. Charyk. Even if all these problems are solved, the Assistant Secretary for Research and Development said, the first Dyna-Soar will fly at less than orbital speed because of booster problems.

Problems to be faced include developing wing structure capable of taking "extremely severe" aerodynamic heating. Communications and maneuverability are also major headaches, Charyk said.


He also said power sources for equipment on the Dyna-Soar raised major questions, and that these systems would be limited probably to radar and nuclear systems, both of which are far from being perfected. In this line, Charyk said, about five to forty KW Solar Dynamic systems appear most attractive and may possibly be competitive with nuclear devices up to much greater power requirements.

This would also avoid many hazards inherent in nuclear sources. However, Charyk said, dynamic systems of any kind are limited because of reliability and durability problems, including corrosion and erosion.

Army May Mechanize Personnel Records

Back in mid-September, the Army Adjutant General's office finally shook loose a circular (which knocked around the Pentagon for nearly a year after it had been written) on "Mechanization of Certain Repetitive Personnel Writing Operations." The mechanization, which is supposed to save something on the order of \$5 million in man hours

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alone and pay the cost of the new equipment in three months, was to be effective at "the earliest possible date but not later than 90 days from the date of this circular."

Circular concerned unit personnel sections primarily, was to use equipment already being employed so effectively on its mobility theme by the 101st Airborne (see November '58 ARMED FORCES MANAGEMENT) and lately with enthusiasm by the Marine Corps.

As of mid-December when the equipment was to be in operation, an informed source estimated that barely ten percent of those who are supposed to be using the system, will be. Among the roadblocks: parochialism, hand-sitting, and, surprisingly, an apparently casual attitude by some Army elements toward the meaning of "circulars."—which are supposed to imply to personnel in the field "follow this unless you have a very solid local reason why not, and if you think you do, check with us first."

Army maintains six reception centers in the U.S., two overseas to handle new incoming personnel. By contrast, Air Force operating on a mechanized basis needs only one to do the same job for the whole Air Force. Besides needing a more complex setup to do the job, Army expends some 3.5 million man hours in excess of those authorized to handle the personnel paperwork, according to an Army study which prompted the AG circular.

The direct concern of this project, which TAGO is trying to build a fire under, is a mechanization of personnel record writing. However, before they would enter the project directly, they analyzed the problem: an excessive workload being carried by unit personnel sections, made critical by the implication of the military voucher system and its huge additional administrative burden on UPS.

One of the studies startling revelations: If all authorized personnel worked 40 hours a week for a full 52 weeks, more than 25% of the present workload would remain unfinished. Of the four possible solutions, reduction of paperwork was thrown out because unit personnel sections are, in fact, being given additional paperwork administrative duties other than the ones already being handled; an increase in authorized UPS personnel strength was impractical; "ADPS may be the ultimate solution and is an area undergoing complete study and analysis, but, unfortunately, ADPS does not supply immediate needs," probably won't be able to take care of the total problem for another five years, if then; "the introduction of mechanical equipment ap-

pears to be the only immediate solution."

(Addressograph equipment was selected and tested for several reasons: cost, quickness and ease of delivery, equipment mobility. The test itself was run not so much because TAGO wanted to prove it out but more because of parochial roadblock justification within the Pentagon itself.)

It now appears that it will be another year before anything like significant progress is made in the program, without a jarring memo from the top. Said one officer, "You're in this management business. I'd say here is a classic example of no feed back to the top, no real channels for seeing that the instructions are carried out. Just how would you get this inert mass of glob moving with the same speed as the 101st Airborne boys?"

Air Force Missile Div. Redesignated as Hq.

Air Force Ballistic Missile Division has been redesignated as a headquarters, placing it on a level with the numbered Air Forces. AFBMD Commander Maj. Gen. O. J. Ritland has said that the change will not affect BMD's mission.

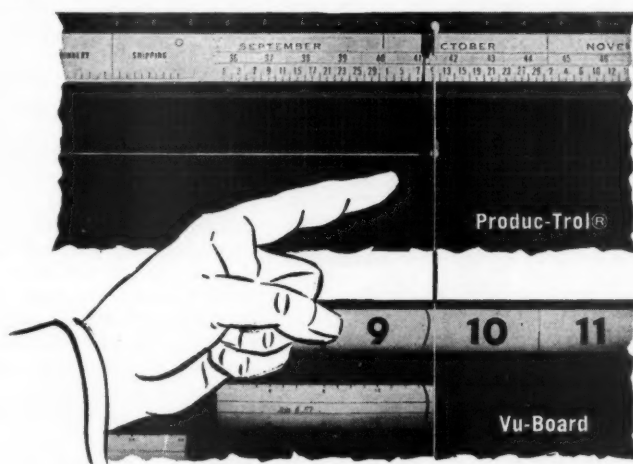
Aim of the change, Ritland said, was to broaden the structure of the division to prepare for additional responsibilities. The change in BMD status is part of the recent reorganization at Air Research and Development Command.

Ritland said the missile division will take over ARDC responsibility for base services, flight operations, aircraft maintenance and many other supply activities. Titles, in some cases have been changed, but duties and responsibilities are not changed. This shift is the first change in the BMD structure since November 1958 when the deputy commander for military space systems was established.

Air Force May Get Ion Propulsion Work

Several experimental programs dealing with ion propulsion and auxiliary power are slated for transfer from Advanced Research Projects Agency to Air Force, according to Dr. Herbert York, Director of Defense Research and Engineering.

But, York said, organization and other difficulties will probably hold up transfer of communications and navi-



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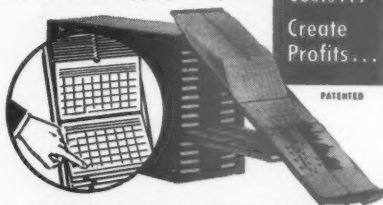
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gation satellites from ARPA to Army and Navy. Present schedule calls for transfer sometime late next spring.

When these changes are made, ARPA will be, for all practical purposes, out of any active operating responsibility for satellites. Discoverer, Midas, Samos have all been transferred to the Air Force.

Also, gray areas of responsibility between NASA and ARPA may be settled in the near future. Partial clearing of the air has resulted from NASA's taking over meteorological work, and Defense Department retaining navigation studies. Communications will be handled by DOD, working in close liaison with NASA, who will study the field of passive relays.

Pre-Fab Building System Developed by Army

A family of prefabricated buildings, featuring interchangeable components, may one day replace the many unrelated types of buildings now used to shelter troops and equipment in various theatres of operation.

Components have been kept to a minimum in the new building system developed by the U.S. Army Engineer Research and Development Laboratories. Using these components, three different type steel buildings—barracks, shops and warehouses—can be erected rapidly by unskilled troops.

The same purlins, girts, roof sheets, doors and windows fit all structures and the barracks' roof beam and high column are used intermediately in the warehouse. According to one engineer spokesman, the prefab system makes shelter possible at lower first and logistic costs than those involved in the use of non-related buildings. This is done by shipping a frame and roof, and using local materials for floors and wall closures. Planning now calls for maintenance of the buildings in depot stock for issuance against job requirements.

Military Space Stake Outlined by Schriever

The U.S. must exploit space for military purposes, says Lt. Gen. B. A. Schriever, Commander of the Air Research and Development Command. Speaking to the Women's National Press Club in Washington, the AF General said "for the first time during our short history as a nation, the U.S. is open to destructive attack. Add to this the element of surprise. Today there exists no defense against a ballistic missile attack—in fact a warning capability has not yet been established.

Schriever continued, "We should get

it fixed firmly in our minds that the development of an operational capability in space, that is our ability to use it in a practical way, is not simply an adventure. Certainly great prestige follows a successful feat, such as placing a satellite around the moon or into orbit of Venus.

"Such prestige is very important in our world of today. But it is not the kind of space activity on which the survival, or even the security of our nation depends. My really pressing concern—both as an Air Force officer, having certain amount of responsibility for national security, and as an American who believes in our way of life—is the direct and immediate importance of exploiting the advantage that space offers to our vital deterrent posture."

Schriever warned that the public does not yet understand the importance either of surveillance and warning devices or of the command and control systems needed to speed the decision making process. He then emphasized the "vital role" that space vehicles could play in improving overall U.S. defensive capabilities.

Industry Developments

More Lethal Bullpup Planned for Fleet

An improved Bullpup air-to-surface missile that is more lethal, will have greater range, and yet be cheaper to produce is now in production and will soon be available for the fleet, Navy has said.

An earlier version of the Bullpup is now operational with the Sixth and Seventh Fleets. Navy has said the improved Bullpup, designed and produced by the Martin Company's Orlando Division, will have a prepackaged liquid fuel motor, replacing the present solid fuel type. It will have a more powerful warhead, and an improved guidance package.

Improved production techniques and higher quality standards developed by Martin—Orlando will cut costs on the new model.

The new Bullpup motor will be interchangeable with those used in the present airframe, and will increase the limits of the range of temperatures in which Bullpup can be stored or fired. The guidance system will feature more produceable and more efficient components.

Present range of Bullpup is over two miles. The new missile will continue to use a radio command guidance system, but will function at greater ranges thus extending the missile's range.

ARMED FORCES MANAGEMENT



Procurement Trends

HEAVY NAVY EMPHASIS ON SONOBUOYS as a means of ASW detection is witnessed by recent contract awards in this area, totaling some \$13-million. Involving follow-on production type contracts, largest portion of the \$13-million (over \$4-million) will go to the Hazeltine Corp., for some 32,000 sonobuoys.

RELIANCE ON INDUSTRY STANDARDS, SPECIFICATIONS and practices wherever possible will be future Defense Department policy in all cases, according to Assistant Defense Secretary (S&L) Perkins McGuire. Aim is to reduce costs on military purchases and stocks, and to further service-wide standardization. Last year, McGuire said, was the first in which more catalog numbers were deleted from DOD lists than were added, marking what could be considered a break-even point in a continuing battle.

FIRST PRODUCTION MODEL OF THE AIR FORCE HOUND-DOG missile has passed into the hands of Air Force, with the first SAC squadron to be armed with the missiles during next summer. Said to be immune to decoying or jamming, the Hound-Dog will serve to greatly extend the range of SAC's B-52s, while also increasing crew safety and destruction potential.

SHARP VARIANCE WITH THE AIR FORCE IDEA OF ADVANCED PRODUCTION as a means of cutting lead time has been voiced by BuWeps Chief RADM. P. D. Stroop. Forced by what are primarily economic decisions, the Navy philosophy will be to hold off on any production effort until research has proven a sure thing, then to go ahead on what will be the most economical course of action. Which comes first, the money or the time?

ONE LINE OF REASONING BEHIND BUWEPS MANAGEMENT SET-UP is to form a strong second-tier management line up hinging on the Assistant Chief for Program Management, thereby freeing the Bureau Chief for such major (but not in the Bureau) activities as calming Congress, providing liaison with other DOD organizations, and justifying budgets to whom-it-may-concern.

ARMED FORCES SUPPLY SUPPORT CENTER is beginning to make itself felt in military supply operations. Brightest gold star earned so far was the announcement last month that two new single managerships (Army for General Supplies and Navy for Industrial Supplies) had been approved by Defense Secretary Gates following an AFSSC recommendation. In terms items supply items control (approximately one half million) the two new setups will dwarf any similar single manager groups now functioning.

ONE SOUR NOTE: AFSSC HAS BEEN FORCED to pull in its horns, revamp its organization and approach to its primary responsibility, economy and efficiency in supply operations. The reason: the field is just too big (with over three and one half million items) for any one man, or group of men to handle.

AFSSC AND THE RELATED ORGANIZATIONS will pour most of their time into such promising areas as standardization, hope common sense among supply people will help solve some of the others. (Among the common sense examples: why do we have military specifications on shuffle boards, mil. specs on commercially available automobiles—of which defense buys about 3,000 a year—when Hertz Rent-A-Car buys 23,000 at a crack with no specs at all?)

Procurement Trends

84% of Navy's Dollars Spent in Competition

Navy attained some form of competition in 84% of its total new procurement dollars during fiscal 1959, according to a comprehensive study recently conducted under VAdm. E. W. Clepton, Chief of Navy Material.

Navy says the study disproves growing public misconceptions that there is serious lack of competition in most military procurement. Navy claims study results show real competition exists in most negotiated as well as all advertised procurement.

The Navy study broke down the \$6,076 million total procurement funds placed under contract during fiscal year. The report stated there was competition in 84% of this total, awarded as follows: 23% after competitive formal advertisement; 4% under small purchase procedures applying to procurement not exceeding \$2,500; 20% after competitive negotiation between two or more suppliers; and 37% negotiated with one source after the source

was successful in design competition.

Only 16% of total dollars were negotiated with a single source without apparent competition, and even in this area, the study said, it is the practice to evaluate capabilities of all new suppliers before selecting the best source.

The study pointed out that dollars in this category generally fell to such specialized projects as the Polaris missile, nuclear powered submarines, or nuclear powered aircraft carriers.

Navy Develops Technique For Engine Evaluation

Navy has developed a new technique for evaluating aircraft engine conditions. Aim is to prevent serious inflight engine failures, Navy has said.

Heart of the process is analyzing samples of engine oil with a spectrometer to determine identity and quantity of metals present. Under the new technique—developed by Navy's new BuWeps—a one ounce sample of engine oil is burned between two carbon electrodes in a direct-reading spectrometer which identifies metals present and indicates their quantity.

Although the technique has long been used by railroads and other operators of diesel equipment, it has not been previously used with aircraft engines, Navy says. BuWeps further believes that similar methods may be possible with gas turbine engines.

Weapons System Work Slowed by Air Force

Air Force plans to take on more responsibilities for detail work on weapon system development and production, according to Major General Beverly S. Warren, Chief of the Aeronautical Systems Center. Warren recently said that the so-called Category I contract, in which a single manufacturer is responsible for all subcontracts, is probably dead.

Underlining Warren's statement was Major General Ben I. Funk, Commander, Ballistic Missile Center, Air Materiel Command. Funk said "Actually, there is no such thing as a prime contractor in the ballistic missile business." Funk said Air Force now picks major associate primes from whom they buy subsystems as needed.

Warren told a meeting of the Aviation Writers Association that Air Force is gradually developing its own executive management capability. In this

connection, he said that organizations like Space Technology Laboratories and Miter Corp. are disappearing. But, he said, this did not mean that similar organizations would disappear from the Air Force procurement picture.

In remarks to The American Management Association in Los Angeles, Major General Funk said that "only in extreme cases" will the Air Force invest its own funds for construction of industrial facilities in the future.

He pointed out that "it is to the very best interest" of prime and subcontractors to use their own capital for this type of construction, because "the better the capabilities, the better are their chances of being successful in receiving a contract."

Funk also expressed preference for the incentive-type contract over the cost-plus-fixed-fee method. He said that Air Force encourages the cost-plus-incentive-fee approach "wherever and whenever possible."

How AFSSC Can Save \$20 Million—And More

When the Armed Forces Supply Support Center was set up a little over a year ago, there was a good deal of trepidation and pessimistic observation on its likelihood of success.

Because AFSSC operates in a comparatively unglamorous field of supply, what it has done in a year, and is planning for the future, makes few headlines. Its contribution to improved efficiency and effectiveness is beginning to be felt, nonetheless, will become even more important in the next few months.

Set up, after exhaustive tri-service study, to streamline the management of defense supply operations (and at the same time answer hard-driving advocates of the "single service of supply"), AFSSC is accumulating in the last few months such significant blue ribbons that its own record may well quiet the "not far enough" organizational critics.

With plenty of close policy coordination help from the Office, Assistant Secretary of Defense/Supply and Logistics, AFSSC has already made some significant contributions. Among them: in one field alone, standardization, where the office has some 5900 projects going at once, their efforts to cut costs in the engineering drawing business are impressive—and being made even more so because AFSSC, while proud of the effort, does not consider this their most outstanding contribution so far to supply operations.

Defense Department has conservatively estimated that it costs them \$2 billion a year for engineering drawings

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and associated material. Until six months ago (with the issuance of MIL-D 703 -27 in June), there were 158 different military specifications for drawings, i.e. size, dimension, format, etc. The Directive standardized them, brought an estimate from industry that the move can conceivably save some \$20 million a year.

But this six-months-old directive was only a beginning. AFSSC is now moving into microfilming of drawings.

Generally speaking, all engineering drawings are government property. However, particularly in dealing with aircraft companies, defense has been willing to accept contractor drawings. (Approximately 7 million of them on the B-52 alone).

With the coming of age of the missile age however, economy has been thrown a curve by Army and Navy ordnance people who have insisted that drawings "must be for the record," that contractor drawings must be redrawn with in many cases the addition only of "Army Ordnance" or "Navy Bureau of Ordnance" in the lower right hand corner.

Said one AFSSC official, "This is one nut we have yet to crack. Frankly, we've been waiting until the Navy BuWeps organization shakes down a little bit; but they should be hearing from us in two or three months.

In this one area alone industry is putting a tremendous amount of pressure, is encouraged by AFSSC's results. (Within AFSSC most of the praise is going to Project Manager Charles Miller, ASD/S&L Executive Bill Point.)

AFSSC's attack on cost of engineering drawings has not been limited to the drawings themselves. Another aid has been the newly-set-up technical identification file (TIF). Concentrating, at the moment, primarily on ground support equipment for missiles (which costs two or three times what the missile itself costs), the TIF at present describes 500 equipments which have already been designed and built to service some part of present missile systems. File may go up to two or three thousand equipments.

By contracts, prime-sized defense contractors are required to use one of these components if at all possible before designing any new ones.

Aside from the obvious benefits to the supply system, the cost of hardware and R&D, etc., "everytime we get a company to use one of these, we don't need to buy any more drawings."

Micro-filming of engineering drawings will be launched as a formal program within the Air Force first, will, it is hoped, gradually spread to all three services. Although the micro-filming of drawings has been checked out and is in use in offices here and there,

its adoption as a standard program within defense shows a great deal of promise—as well as stirring up a good deal of excitement in industry, among defense suppliers for economy reasons and among drawing and micro-film and reproducing equipment manufacturers for marketing reasons.

Ordnance Chief Scores Research Nit-Picking

Chief of Army Ordnance Lieutenant General J. H. Hinrichs has told the Industrial Preparedness Committee of the American Ordnance Association of the need to go into production on weapons when they are rated "good" and not wait for them to become "perfect."

Hinrichs said, "Virtually everyone of our weapons is an interim weapon, good only until it is succeeded by an improved model or discarded altogether in favor of something different and better." On this basis, Hinrichs urged an adjustment to "realities" which would continue R&D work, but only on unquestionably major improvements.

Hinrichs said this did not mean discontinuing inexpensive product improvement programs, but that "we must be selective and very purposeful in our research and development programs."

Hinrichs said that presently Army is spending about 70% of its money on rockets and missiles and about 30% on conventional weapons. He said the dilemma of how Army funds should be divided between these two programs was one of the "vital management problems" that Army faces.

Computers to be Used In AF Supply Work

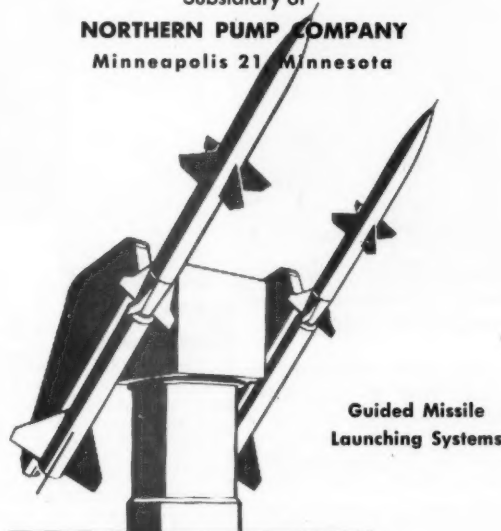
Air Force has devised a system for mechanizing base supply operations with an electronic computer. Described in a report released by the Office of Technical Services, U.S. Department of Commerce, the system will allow faster service, lower cost, less paper work, fewer personnel, fewer errors, and better managerial work.

The system is built around the Materiel Information Flow Device, a medium speed electronic data processor which serves as a central-keeping device. Teletype machines begin supply transactions. All transactions affecting stock balances are automatically posted to inventories within the computer, creating a perpetual inventory for all stock items.

The report describes the system and tests of it by operation in parallel with

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an existing base supply system. Although difficulties are discussed in connection with the AF system, characteristics of an ideal computer are also outlined in the OTS report. The report may be obtained through OTS, U.S. Department of Commerce, Washington 25, D.C., Price \$3.00.

Clear Decisions Urged On Production Go-Aheads

Clear decisions to either stop or continue with projects ought to be made promptly at the end of the research and development phase, according to Rear Admiral Paul D. Stroop, Chief of the new Bureau of Naval Weapons.

Stroop said this would provide the support required for research and development while still saving the large money needed for pilot and later major production. Sighting the savings to be had, Stroop scored the practice of "starting and stopping, then restarting or possibly drastically re-orienting some of our program."

In sighting the problems he expected to face in his new post, Stroop stressed the problem of shortening lead time. He said one way would be to use parallel approaches but added "the need must warrant parallel costs."

Stroop also cited the problems of complexity and maintainability. He said: "We must guard against producing equipment so sophisticated that our personnel cannot maintain it. We must tailor our equipment to the level of talent available in the armed forces to operate and maintain it."

Stroop said a Navy survey has shown that only one third of the electronic equipment in the fleet was working satisfactorily. Another survey he said showed maintenance on electronic equipment during its useful life varied from two to ten times the acquisition cost.

B-70 Stretchout May Kill Program

The B-70 chemical bomber program—as far as being a weapons system—is to all intents and purposes dead.

The two year stretchout ordered by Air Force for the advanced bomber program will not only drastically increase the lead time on it but will also virtually halt development on many components needed to make the plane an effective weapon system.

Under the "stretchout" Air Force will get little more than a research aircraft. Such vital combat components

as the bomb/navigation system will not be included in the program under present Air Force planning.

Air Force has also said that the two year stretchout will result in cancelling several major subcontracts, because of financial limitations of the fiscal 1961 budget. Also, development will be slow as to make continuation of the subcontracts unfeasible.

It is likely that the Pentagon will reverse a decision for getting North American, the prime contractor, to pull subcontract work back to its Los Angeles plant.

Contractor Poll Set On Patent Policies

Defense Department officials have agreed to comply with a Senate request to poll 20 top defense contractors on their patent practices with subcontractors. Request came from Sen. Russell Long (D-La.) during a public hearing called to inquire into conflicting government patent policies.

James P. Falvey, deputy assistant secretary of Defense (S&L) said DOD would write to the contractors. A DOD associate told the subcommittee that if primes do follow a practice of releasing patents it would be done by separate negotiations and not written into the original contracts. In any event, DOD would reserve its rights to a non-exclusive license with the subcontractors' inventions.

Witnesses said that while DOD usually does not buy up background patents and data under commercial-item contracts, it feels the government is protected on spare parts. They cited DOD reluctance to exert its economic power to force contractors to give up data on items that can be bought in the open market.

Much Navy Money Is Still for Aircraft

Aircraft will continue to take a considerable share of the Navy budget in fiscal 1961. This will mean continued procurement of the P3V military version of the Lockheed Electra, and buys on the GV-1 (C-130) for the Marine Corps.

Navy would also like to get a VFOL/STOL fighter for the Marines, but current funding would only allow continuing present studies.

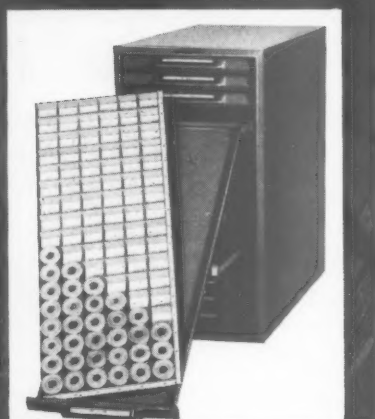
As a measure of Navy's success in aircraft development work, Air Force has expressed interest in Navy's new A3J attack plane, built by North American. The A3J is now in the first stages of test and evaluation work. The budget squeeze is once again resulting in a cutback in numbers of these planes that Navy had intended to buy.

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Newsletter

Armed Forces Management Association

Washington 25, D.C. Phone: OTis 4-7193

National President: Hon. George H. Roderick

Executive Director: VAdm. Harry E. Sears, USN, ret.

The New Year

Your National Headquarters extends to the membership, friends, and supporters of AFMA warm greetings and best wishes for your success and happiness in the important year ahead.

Just what lies ahead in 1960, and the exciting new decade which it heralds, will depend largely on our own efforts. This applies both to the country which we love so much and to our organization in which we have such a keen interest. As service to and in AFMA is service to our country, we will take a sight on how we can improve our operation.

We feel that we have built a firm foundation for the future and that the Association's potential for service is limitless.

The calendar year just completed was the finest in our history. Here is why:

Membership has doubled and now stands at over 2,000. Chapter enthusiasm and drive was largely responsible for this wonderful showing.

Corporate membership now includes 35 of our country's finest companies, a veritable gold mine of management knowledge and experience. Gain in this category is over 800% and is largely the result of effort at national level. Industry is developing an increasing appreciation of the many values of affiliation with AFMA.

Four new chapters were chartered in 1959, with a fifth certified for chartering in early 1960. All of these chapters are vital, meaningful organizations holding much promise of rich experience for their memberships, while making valuable contributions to AFMA objectives. We salute the hard-working people who made them possible, and the installation commanders who lent firm support in their formation. Included in this group of new chapters is a science chapter—the first in AFMA—which we are certain will prove a valuable addition to our chapter family.

Administration of the Association has been strengthened greatly by the consolidation of all headquarters functions in one location, and the introduction of new equipment, forms and informational material.

A strong, effective and cordial relationship with ARMED FORCES MANAGEMENT magazine has been established to our mutual benefit. Prompt delivery of this fine magazine to the membership is now assured. If isolated instances of non-delivery still exist, we want to know of them.

Lastly and most important, AFMA is becoming far better known than formerly. Its prestige and reputation are on a high plane. Its operation is receiving the finest support from the Secretary of Defense and the Services. Support at the local level is mounting rapidly, as commanders in the field learn of AFMA's value to management improvement programs.

These many signs of progress are most gratifying to your national officers as they should be to all the membership. Everyone wants to be on a winning team; in this instance an organization with prestige, reputation for service and real benefits for the membership. In AFMA we feel that we have such an organization. We are grateful to

the membership for the part they have played in our gains, especially the recruitment of new members. Working closely together, there is no limit to what the Association can accomplish. We have come a long way in a short time. We have a long way to go. The way should be pleasant.

All indications point to another banner year in 1960, as the improvements introduced last year bear fruit and the Association's reputation for service continues to become better known. We can all help in stimulating growth. Here is what we must do:

Publicize AFMA and its services at every opportunity—by word of mouth, in station papers, through local press and radio. Interest installation commanders in the program—get them behind your chapter activities. Sign up new members. If every member will get but one new member, our membership will double in '60. Simple but graphic arithmetic. Improve chapter programs and chapter administration. Keep national headquarters informed of changes in chapter officers. Let us have your suggestions for improvement of services.

We need new chapters, particularly in the vicinity of large, metropolitan areas not now covered. Chapters now forming should expedite the process. We have many such which need but a small effort locally to become useful management vehicles. Take the plunge!

Chapter Briefs

Naval Weapons Plant Chapter No. 34, Washington, D.C. was formally chartered on 9 December at a dinner meeting addressed by AFMA National President, Hon. George H. Roderick. President of the new chapter is Capt. Charles G. Pahl, CEC USN. Superintendent of NWP is Capt. Charles E. Briner, USN, who was an honored guest at the ceremony.

Secretary Roderick again did the honors on 14 December at a luncheon meeting at the Diamond Ordnance Fuze Laboratory when the D.C. Science Chapter No. 35 was formally awarded its charter of membership. The scientific group's first president is P. A. Guarino. DOFL commanding officer, among those honored at the meeting, is Lt. Col. Robert W. McEvoy, USA. (Secretary Roderick's remarks on both occasions are covered elsewhere in this issue.)

Our salute this month goes to Wright Brothers Chapter No. 8, whose excellent program brochure for the 1959-1960 year has been used as a model for distribution to all chapters. Chapter President is Col. Leon W. Armour, USAF.

Hawaii Chapter No. 18 had as its guest speaker at a recent dinner meeting held at Fort Shafter, Kenneth D. H. Yuen, who presented a very interesting talk, with slides, on "Management Engineering in the Air Force." Frank W. Jenkins is President of this interesting multi-service chapter.

Meeting at Fifth Army Headquarters on 17 November, Great Lakes-Chicago Chapter No. 32 presented Colonel Arthur L. Selby, USA with a certificate of appreciation for consideration shown to this chapter. President is Robert V. Smith, headquarters Ninth Naval District.

The Value of AFMA

(The following is taken from remarks by Hon. G. H. Roderick, Assistant Secretary of the Army (FM) and AFMA President.)

One of the greatest values of this Association, I feel, lies in the opportunity which it affords us who work in the same field to learn from each other.

Although most of us here today are familiar with our national association, I feel that this is an appropriate occasion to emphasize that the objectives of our Association—which are to improve the efficiency, effectiveness and economy in the use of our national defense resources—have the enthusiastic indorsement of all of the Service Secretaries and the Secretary of Defense.

Achievement of maximum efficiency and economy in defense work is a tremendous challenge to us and to our nation. This challenge is especially meaningful today if we assess the relative military and economic positions of the United States and the Soviet Union.

Although our military budget has been at record peacetime levels for a number of years now, the Russians are spending proportionately more for defense than are we. Defense expenditures in the Soviet Union, as a percentage of gross national product, are roughly double our own. Coupled with this, increasing Soviet progress in the fields of missiles clearly indicates the attainment of a high level of scientific achievement and technology which may be applied to military purposes.

Because our military leaders are faced with the stark facts of Russian military strength and advancing technology, they have continuously expressed their great concern when discussing funds to perform their assigned missions.

Let us now briefly look at the economic picture. Again we find startling evidence of a situation with which we must contend—a Soviet economy growing at a rate roughly twice our own. Further, less than half the output of her economy goes to the Soviet consumer in the form of consumable goods and services. Russia is putting back a larger percentage of her gross national product into capital investment for industrial expansion.

Concurrently with the rapid expansion of the Soviet economy, the Russians are challenging us in the area of aid to the undeveloped areas of the world. Russia is lending money and technicians for such projects as the Aswan Dam in Egypt. She is stepping up her efforts to advance trade relations with the nations in our own back yard

—specifically I mean the countries of Central and South America and the Caribbean. Due to the spectacular success of Russia in the exploration of space, she has won a major propaganda victory for the quality of her technicians and has likewise impressed other nations of the world.

While we recognize the necessity, for continued assistance to foreign countries whose friendship is vital, we learn that the extent of our spending abroad has led to considerable concern. In 1958, for example, 3.4 billion more dollars flowed abroad than were paid into this country by foreign nations. This situation, if continued, could lead to a weakening of the dollar as the principal international reserve currency of the Free World.

I have given you this brief comparison of our relative defense and economic positions with that of Soviet Russia because I wanted you to recognize why our association which is dedicated to management improvement is so enthusiastically indorsed by those charged with the defense of our country. There are many measures which can be undertaken in a variety of fields in order to help to preserve a sound economy and yet provide for an adequate defense, but I maintain that one of the most important—indeed an essential one of these—is improved management.

This is the great challenge which confronts us today. Recently, Mr. M. C. Patterson, Vice President and General Manager of Dodge Division, Chrysler Corporation, addressed himself to the importance of free management's role in the economic struggle with world Communism. "As the world struggle for personal and economic freedom deepens," he said, "free management is going to become more and more important."

"We are betting on free management against the whip. We are betting on the creative imagination against authoritarianism. It is a bet we must win."

It is indeed a bet that we must win, and those of us in the Armed Forces Management Association who are dedicated to improvement of management all along the line in the Department of Defense have an excellent and timely opportunity to make a real contribution in this area.

Each of you may feel that as a single member of this Chapter that your individual responsibility for contribution to this great national purpose is negligible. Secretary of Defense Gates, tells

the story of a village that decided upon a feast and asked each man to pour a pint of his best wine in a cask for use during the feast. Each villager thought, "One pint in so many won't make any difference. I'll save my wine and simply put in a pint of water." When the feast started and the cask was hopefully opened only water was found.

The making of a manager is an evolutionary process. There are three major stages involved. These stages apply at the various levels of management as the manager progresses up the ladder of advancement. First, the manager deals with things. Secondly, he deals with people. Thirdly, he deals with concepts.

In dealing with things, technical competence plays an important role. Contacts are largely in the fields of tangibles. He has ample past experience from which to draw, and he must know how to interpret these present conditions in relation to the past. The important thing here is that at this stage he has ample support for his decisions in the form of tangibles.

As he advances and gains experience and maturity, the manager leaves the matters requiring technical competency to others and gets involved in the intangible of dealing with people. He becomes involved with motivation and communication. He has less recourse to established practice. He now has to rely on others—on their loyalty, understanding and support. For at this stage, it is only in his ability to get others to perform his will that he can measure his success.

He now has the responsibility of welding all of the bits and pieces which go to make up the organization into one voluntary and concerted effort aimed toward the common goal.

The last stage of management development concerns concepts. Here is where we get into truly uncharted territory. Here is where our future long-range objectives are determined. A wrong decision here can place the entire enterprise in jeopardy. The importance of the individual parts must be subordinate to the over-all importance of the whole. The over-all objectives must be such that we are assured of keeping ahead of competition.

In conclusion let me say that I hope that the inauguration of this Chapter will further increase the interest in management improvement in your various responsibilities, and will result in a stronger membership from your organization. The history of this plant reflects not only the vital role which it has played for the United States since it was first established, but also reflects the significant role you here have played in our changing technology.

ARMED FORCES MANAGEMENT

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From 1792 until the present, Wall Street has played an important part in the nation's financial history. This is how the system works, and how it serves its users.

In the spring of 1792 some merchants and auctioneers gathered under a buttonwood tree along Wall Street in downtown New York City and underwrote a national future. They did this by organizing young America's first securities market.

In the long years since then, many changes have come to the New York Stock Exchange. As the Exchange moved first into a coffee house and finally into a great stone edifice on Wall Street, more and more corporations issued securities and stock ownership multiplied among investors throughout the country.

But for all this change and growth, the basic purpose of the Stock Exchange remains much the same as the day it was first organized under the buttonwood tree. More than anything else, it functions as an arena where shares of American business—an average of two million shares daily can be bought and sold quickly, conveniently and economically.

To see precisely how the Stock Exchange serves as the nation's market place by bringing buyer and seller together in open auction, it is helpful to focus right down on a particular trade as it unfolds in its normal sequence.

For purposes of illustration, let's assume that an investor decides to buy some stock in the ABC corporation through a member firm of the New York Stock Exchange. What the investor wants to know is the latest price of the stock.

Within a matter of minutes the member broker learns the latest quotation on ABC shares: "25 bid, 25½ asked." This verbal shorthand is a part of the language of investing. It means simply that at the moment \$25 amounts to the highest price anyone is offering for one share of ABC, while \$25.25 amounts to the lowest price anyone is willing to accept for a share.

In most cases, the investor agrees to buy his stock "at the market," or at the best available price when his order reaches the trading floor. On the other hand, he could place a "limit order" by instructing the broker to buy ABC shares only at a specific price—say \$24.50—if and when prices fall to that level.

On a trading floor almost the size of a football field and five stories high, a telephone clerk receives the order for ABC. Quickly, without wasting a moment, he relays the order to a floor member who represents the firm with which the investor does business. And thus the vital auction phase commences.

The broker hurries to the trading post where ABC shares are traded. Other brokers with orders to buy or sell ABC are clustered at the same wooden, U-shaped post. Around the perimeter of this post, and 17 others just like it, the hundreds of member brokers conduct this business for investors.

"How's ABC?" the broker asks.

"Twenty-five to a-quarter." He hears the ancient auction idiom.

"I'll give an eighth for 100," he says.

"Sold 100 at 25½."

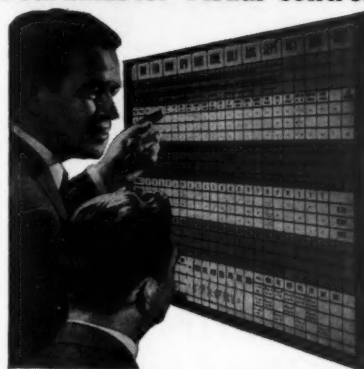
They have agreed to a price and so the transaction takes place. Over and over again every day that same procedure occurs as brokers buy and sell millions of dollars' worth of securities for investors scattered all over the nation.

The actual transaction involves only these steps—and nothing more. The two brokers complete their verbal agreement by noting each other's firm name and reporting the transaction back to their telephone clerks so the customers can be notified.

Meantime, an Exchange employee has sent a record of the transaction to the ticker department. Seated at a ticker machine that looks like a typewriter, the operator records the sale in code: ABC 25½. Immediately that sales report appears on ticker instruments everywhere.

Plainly, the Stock Exchange has nothing to do with establishing prices. It neither buys nor sells securities. Instead it simply sees that prices are arrived at openly and fairly, and recorded on a nationwide ticker.

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In My Opinion

Kudo on Directory Issue

I have just finished reading your November issue of ARMED FORCES MANAGEMENT magazine and I wish to congratulate you and your staff on one of the finest issues, to date, of your magazine. I found the material well organized, interesting reading and most informative.

I hope you will find time in the near future to do a story on the Ordnance Tank-Automotive Command and its many facets of operations which reach around the world.

Lt. Col. Joseph E. Stermer
Special Assistant to the Commanding General
Hq., Ordnance Tank-Automotive Command

Kind Words

I have just received my copy of the November issue of ARMED FORCES MANAGEMENT and would like to offer my congratulations for the excellent way in which you covered the Department of Defense.

While each of the services has published material on their individual components, there has been no single source of information on the Department of Defense and the military departments. Your special edition has filled this gap admirably.

As we say in the Navy, "Well Done!"

RAdm. C. C. Kirkpatrick
Chief of Information
U.S. Navy

More Kind Words

I wanted to write you a brief note to compliment you on your article on International Security Affairs as it appeared in the November 1959 issue of

ARMED FORCES MANAGEMENT. Assistant Secretary Irwin read it with interest and commented that it was a fine job. I might add that the entire issue makes a valuable contribution to a greater understanding of the Defense Department.

Just for the record I might note that on page 49 there is a statement that the program covers "well over a dozen countries"; this is probably a typographical error, since I am sure that you realize that more than 40 countries are involved. Otherwise, the article gives a very accurate impression of this organization. . . .

Timothy W. Stanley

Special Assistant
Office of the Assistant Secretary of Defense
International Security Affairs

News Item Noted

In your interesting editorial in the November 1959 issue of ARMED FORCES MANAGEMENT, I noted an "Item" about the "Navy establishing pilot work study groups to advise commanders at sea on ways to better use their ship work force in non-fighting operations."

As we have been doing research on more efficient manpower utilization in messing operations ashore for several years, we are interested in obtaining the references you used as a basis for your assertion so that we can learn more about these "work study groups" and maybe integrate our work with theirs.

A. C. Avery
Technical Director
Food Science and Engineering Division
U.S. Naval Supply Research and Development Facility
Bayonne, N. J.

Suggest a quick look at our December issue, page 11. Hope it helps.—Ed.

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velocity, target position, barometric pressure, and other data into information for surface to surface missile firings. The soldier-technician monitoring the exchange of computer data will have modularized communications with the other elements of his tactical organization. RCA is the leader contractor of this important United States Army Signal Corps program and is working in close harmony with the electronic components industry.



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